



April 6, 2006

VIA FEDERAL EXPRESS

Elise S. Feldman
U.S. Department of Justice
Environmental Enforcement Section
Environmental and Natural Resources Division
601 D Street, Mailroom 2121
Washington DC 20004

Re: EaglePicher Holdings, Inc., et al., No. 05-12601 (Bankr. S.D. Ohio)

Dear Elise:

We are providing you a ninth round of documents relative to several properties that are proposed for inclusion in the custodial trusts under EaglePicher's First Amended Joint Plan of Reorganization. The enclosed disc contains documents bates-numbered MI00012417 to MI00012543,¹ which relate to the Hillsdale and River Rouge, Michigan sites. These documents will be provided to Jonathan Pierce of the Michigan Attorney General's office. This disc also contains documents bates labeled KS0000710 to KS0000725. These documents will be provided to Erika Bessey of the Kansas Attorney General's office. As indicated previously, this production is not a waiver of any right or privilege concerning the documents or the informal requests, including the attorney-client privilege, all of which the Debtors expressly reserve.

Additionally, we wanted to bring to your attention the document that is bates labeled MI0012495 to MI0012515. It is the Introduction Section of Environ's 1998 Phase I Environmental Site Assessment Report ("1998 Phase I Report"), which relates to the Galena, Kansas, Miami, Oklahoma and Hillsdale, Michigan sites. Although bates labeled as a Michigan document, it is also being provided to Erika Bessey of the Kansas Attorney General's office and Betsey Streuli of the Oklahoma Department of Environmental Quality since it addresses sites

¹ Additionally, we inadvertently started with MI00012417 instead of MI00012416 to begin this production. Therefore, please note that there is no document labeled MI00012416.

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within their jurisdiction as well. In previous productions, we have already produced the portions of the 1998 Phase I Report that relate to the Galena, Kansas property (bates-numbered KS0000155 to KS0000168) and the Miami, Oklahoma property (bates-numbered OK000417 to OK000439). In today's production, we also provided the section that relates to Hillsdale, Michigan site (bates-number MI0012471 to MI0012494).

As we discussed last week, Environ's 1998 Phase I Report covers numerous sites. We have provided the portions of this report that are responsive to your informal discovery request of March 9, 2005 and have thus redacted the introduction section to address only those properties that are being proposed for inclusion in the custodial trusts. If you have questions regarding our approach, please let us know.

We also wanted to respond to several follow-up issues regarding Galena, Kansas documentation that were raised in our March 28 telephone call with you and Kansas. First, Debtors believe that they have identified a copy of the 1996 internal property assessment that is referenced in the Environ's 2006 Phase I Environmental Site Assessment regarding Galena, Kansas. It is being produced today and is bates labeled KS0000710 to KS0000725. However, we would note that it is not an environmental assessment of the property; but merely a building assessment report. Additionally, despite additional investigation, we have not been able to identify any documentation regarding the disposal of the alleged transite siding, the storage of manganese dioxide at the Galena, Kansas site, the location of the stacks and tanks associated with the acid plant, or the demolition and disposal of site structures (although Debtors believe that most demolition material was hauled off-site for disposal). We have, however, produced two maps from 1975 and 1980 that demonstrate that the acid plant was no longer in existence as of that time (bates-numbers KS0000680 to KS0000681). Additionally, we have produced the notice of violation that relates to the PCB labeling issues that Kansas raised as well as documentation on Debtor's corrective measures (bates-numbers KS0000646 to KS0000647). We have also produced the only document that we were able to locate that appears to discuss plans for plugging of several wells at the Galena, Kansas site (bates-number KS0000231 to KS0000232). Finally, we have also provided the proposal for the transformer removal that forms the basis for Debtor's proposed funding numbers relative to Galena, Kansas in the Disclosure Statement (bates-number KS0000679).

If you have any additional questions regarding this production or with respect to the additional issues addressed herein, please do not hesitate to let us know.

Very truly yours,

/s/ Jessica E. DeMonte

Jessica E. DeMonte

Elise S. Feldman

April 6, 2006

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SQUIRE, SANDERS & DEMPSEY L.L.P.

Enclosure

cc: Jon Gulch (via Fed Ex)
Jonathan Pierce (Fed Ex, Michigan)
Erika Bessey (Fed Ex, Kansas)
Betsey Streuli (Fed Ex, Oklahoma)
Paul Harper (via email)
Stephen D. Lerner (via email)
Scott A. Kane (via email)
Karen A. Winters (via email)
Patrick J. Brooks (via email)

JED/acp

U.S. ENVIRONMENTAL
PROTECTION AGENCY

APR 11 2006

OFFICE OF REGIONAL
COUNSEL

Please fill out the following forms as completely as possible. While we would like to be as accurate as possible **Some items will have to be your best estimate or opinion.** For plants with multiple buildings make copies of the building section, as you will need one for each building. If you have questions please call **John R. Ray @ (404) 233-0503 extension 237** and leave a message. I will try to return your call that day.

Location Number (from last Page) #40 ELECTRONICS CHEMICALS
 Address OLD HIGHWAY 166/CRIST CLARK CAFE
GALENA City MO State
 Zip Code 66739

Name of person(s) gathering information LEAD - JANICE PEEK 417-623-8000 - EXT 253
 Land JOHN SWANEY Phone (417) 623-3000 - EXT 253
 Buildings JOHN SWANEY Phone (417) 623-3000 - EXT 253

Please obtain and include with your completed forms the following;

- 1) Plat or survey of your plant showing building and land outline.
- 2) Map of your community showing the plant location.
- 3) Photos of exterior and interior showing "typical" construction
- 4) Local phone book with yellow pages

Do not duplicate items 2, and 4 for communities with more than one plant. In towns with multiple plants one person should be designated to complete the land form for all locations.

Assign a condition code to each building and land improvement from the following of your opinion of the item's condition

Condition	Code
Excellent	E
Good	G
Fair	F
Poor	P
Very Poor	VP
No Value	NV

Land

1 Land area 122.4 acres.

2 Zoning is ^(M2) 100 Industrial _____ Commercial _____ Residential _____ Agriculture
Other _____ or _____ no zoning is in effect in this area. This can be obtained at the
local court house or city hall.

3 Is any part of your site unusable due to wetlands or rough terrain? If so give size in acres or % of
the site. NO

4 Describe your area such as rural, in-town, industrial park, residential area and briefly describe the
adjacent properties. RURAL / RESIDENTIAL TO THE EAST OF PLANT
THERE ARE SEVERAL OTHER PLANTS TO THE WEST

5 The immediate area is STABLE (declining, stable, improving or developing)

6 Major highways and distance from plant I-44 IS 8.8 MILES SOUTH
US 66 IS 1.5 MILES SOUTH

7 Is there vacant industrial land similar to yours for sale in the area? If so obtain the size and asking
price per acre from a local broker or the seller. NO LAND FOR SALE FOR
CARLISLE RESIDUALY (GALENA, KS)

- 1 Size _____ Acres price per acre \$ _____
- 2 Size _____ Acres price per acre \$ _____

Add lines as necessary. This should be done when you accomplish the following.

8 Contact two local brokers or other knowledgeable person and obtain their opinion of the value of
your site on a per acre basis (land only) as if the land was vacant and available for development, a
"ball park" figure only.

(COLUMBUS KANSAS)
Contacted TORCHIA REALESTATE Phone 316-429-1330 Opinion \$ * per acre
Contacted LIVRA CARLISLE FOREST Phone 316-778-2405 Opinion \$ * per acre
(GALENA, KS)

9 Have you purchased or sold any of your site within the last 3 years? If so give the details as to date of sale/purchase, location, sales/purchase price, and size in acres or square feet. NO

10 Have there been any sales/purchases of vacant industrial land in your area that you know about? Please give the details as to size, date of sale and purchase/sales price. NO

11 Contact the local Industrial Development Authority or Chamber of Commerce and get any information they have on area industrial parks, available vacant land and asking prices per acre.

40 ACRES HAVE BEEN OFFERED BY DEPARTMENT OF HIGHWAYS TO BE CONVEYED WITH ALL UTILITIES FROM THE CITY HAS NOT BEEN OFFERED AS OF YET. HOWEVER, IN THE FUTURE ADDITIONAL 77 ACRES MAY BE EDGED FOR INDUSTRIAL DEVELOPMENT (SOURCE CHERYL HANNEB - CITY HALL)

12 Show the location of your property and the location of items 7, 10 and 11 on a local area map ** SEE ITEM #14

13 What, if anything, has occurred in your area that has a positive or negative impact on land values such as a major plant closing or new industry being located in your area? NO

14 Additional comments = THE PRESENT VALUE OF THE LANDS (LEAD OPERATED & CONTROLLED BY THE CITY) COMPLICATE THE SALE OF THE LAND FOR THE PURPOSES. DUE TO THIS UNCERTAINTY THE LOCAL AREA DOES NOT ESTIMATE THE VALUE OF THE LANDS

** PLANT PROPERTY MAP IS OLD (1989). MOST OF THE ACRES SHOWN ON THIS MAP HAVE BEEN ACQUIRED

Buildings

Complete for each building, add as necessary (GALERIA, 12)

- 1 Building designation or use LABORATORY / STORAGE / ADDITION / L1604 / 1004
- 2 Number of stories 1
- 3 Square feet by floor: Basement _____
 1st $37.5' \times 12.8' = 32.8 \times 75' = 5659 \text{ SF} = 2$
 2nd _____
 3rd _____
 Mezzanines _____
- 4 Total square feet of building 5659 SF
- 5 Original year built and years of additions N/A 1934 1938
- 6 Condition code B
- 7 Estimated average exterior wall height 10 Feet
- 8 Use by % 35 % office
 _____ % manufacturing
 _____ % warehouse
 _____ % foundry
 _____ % garage/maintenance
 35 % _____ (Other) LABORATORY
 30 % _____ (Other) LABORATORY STORAGE
- 9 Exterior wall's materials of construction are by estimated %
Brick _____ Concrete Block 50 Metal Panel, Insulated 30 Metal pre-fab _____
Concrete _____ Other (give type) _____
- 10 Framing is steel _____ reinforced concrete _____ wood _____ or % of each
- 11 The building is 100 % heated
 50 % air conditioned
 0 % sprinkler
- 12 Special Features, give estimated sizes of canopies, exterior docks or other unusual interior or exterior features HAS LABORATORY (EXHAUST HOODS, CHEMICAL RESISTANT COUNTERTOPS ETC)

13 Is this building special purpose or could it be adapted to other industrial uses? _____

GENERAL PURPOSE

14 What major repairs does your facility need? Give major items of deferred maintenance and if known, the cost to repair. _____

NO MAJOR REPAIRS PLANNED

15 Additional comments _____

THE ADD'L AGREEMENT WHICH WAS
SIGNED. WOULD PROBABLY EXTEND THE DD TO 60-11-85

13 Is this building special purpose or could it be adapted to other industrial uses? _____

COULD BE ADAPTED & USED FOR OTHER PURPOSES

14 What major repairs does your facility need? Give major items of deferred maintenance and if known, the cost to repair. _____

ROOF REPAIR \$10,000

15 Additional comments _____

Buildings

Complete for each building, add as necessary (GALENA, KS)

1 Building designation or use RAW MATERIALS & FINISH PRODUCTS WAREHOUSE*

2 Number of stories 1

3 Square feet by floor: Basement _____
1st 116.7' x 215' + 23.83' x 65' + ((116.7' + 116.5') / 2) (26.67')
2nd _____
3rd _____
Mezzanines _____
= 29,133 FT²

4 Total square feet of building 29,133 FT²

5 Original year built and years of additions NA 1920 1958

6 Condition code F

7 Estimated average exterior wall height 30 Feet

8 Use by %
_____ % office
_____ % manufacturing
100 % warehouse
_____ % foundry
_____ % garage/maintenance
_____ % _____ (Other)
_____ % _____ (Other)

9 Exterior wall's materials of construction are by estimated %
Brick _____ Concrete Block _____ Metal Panel, Insulated _____ Metal pre-fab _____
Concrete _____ Other (give type) 11' INSULATED METAL

10 Framing is steel 100 reinforced concrete _____ wood _____ or % of each

11 The building is 0 % heated
0 % air conditioned
0 % sprinkler

12 Special Features, give estimated sizes of canopies, exterior docks or other unusual interior or exterior features LOCATED IN GALENA, KS. HAS TRUCK DOCK

13 Is this building special purpose or could it be adapted to other industrial uses? _____

GENERAL - INDUSTRIAL

14 What major repairs does your facility need? Give major items of deferred maintenance and if known, the cost to repair. _____

ROOF & FLASHING REPAIRS

15 Additional comments _____

Buildings

Complete for each building, add as necessary

1 Building designation or use MINEO4 DRYING (PRODUCTION) AREA

2 Number of stories 1

3 Square feet by floor: Basement _____
1st 405.3' x 141.7' = 29,162 FT²
2nd _____
3rd _____
Mezzanines _____

4 Total square feet of building 29,162 FT²

5 Original year built and years of additions _____

6 Condition code F (SEE COMMENTS) SIDING NEEDS REPAIRS

7 Estimated average exterior wall height 30 Feet

8 Use by % _____ % office
40 % manufacturing
20 % warehouse
_____ % foundry
20 % garage/maintenance
_____ % _____ (Other)
_____ % _____ (Other)

9 Exterior wall's materials of construction are by estimated %
Brick _____ Concrete Block _____ Metal Panel, Insulated _____ Metal pre-fab _____

Concrete _____ Other (give type) 60% STEEL INS (UNINSULATED) 40% UNINSULATED METAL

10 Framing is steel 100 reinforced concrete _____ wood _____ or % of each

11 The building is 00 % heated
00 % air conditioned
00 % sprinkler

12 Special Features, give estimated sizes of canopies, exterior docks or other unusual interior or exterior features _____

13 Is this building special purpose or could it be adapted to other industrial uses? SUITABLE
FOR FOOD STORAGE

14 What major repairs does your facility need? Give major items of deferred maintenance and if known, the cost to repair. REPAIR AND REPLACEMENT OF ALL THE
WOODEN TRUSSES ROOFING AND BRACING WOULD BE NEARLY COMPLETE
CURRENT PLAN IS TO REPAIR AND REPLACE ROOFING FOR A TOTAL OF \$21,620.

15 Additional comments _____

Land Improvements

1 Square Feet Paving 76,500 sq ft Condition code F

_____ % asphalt
_____ % concrete
100 % gravel

2 Feet of Fencing 3450 FT Condition code E

3 Feet of Rail siding NA Condition code _____

4 Fire protection water storage tank NA Condition code _____

Gallon capacity _____
Elevated or _____
On Grade _____

5 Water Supply X City _____ Well _____ Condition code E

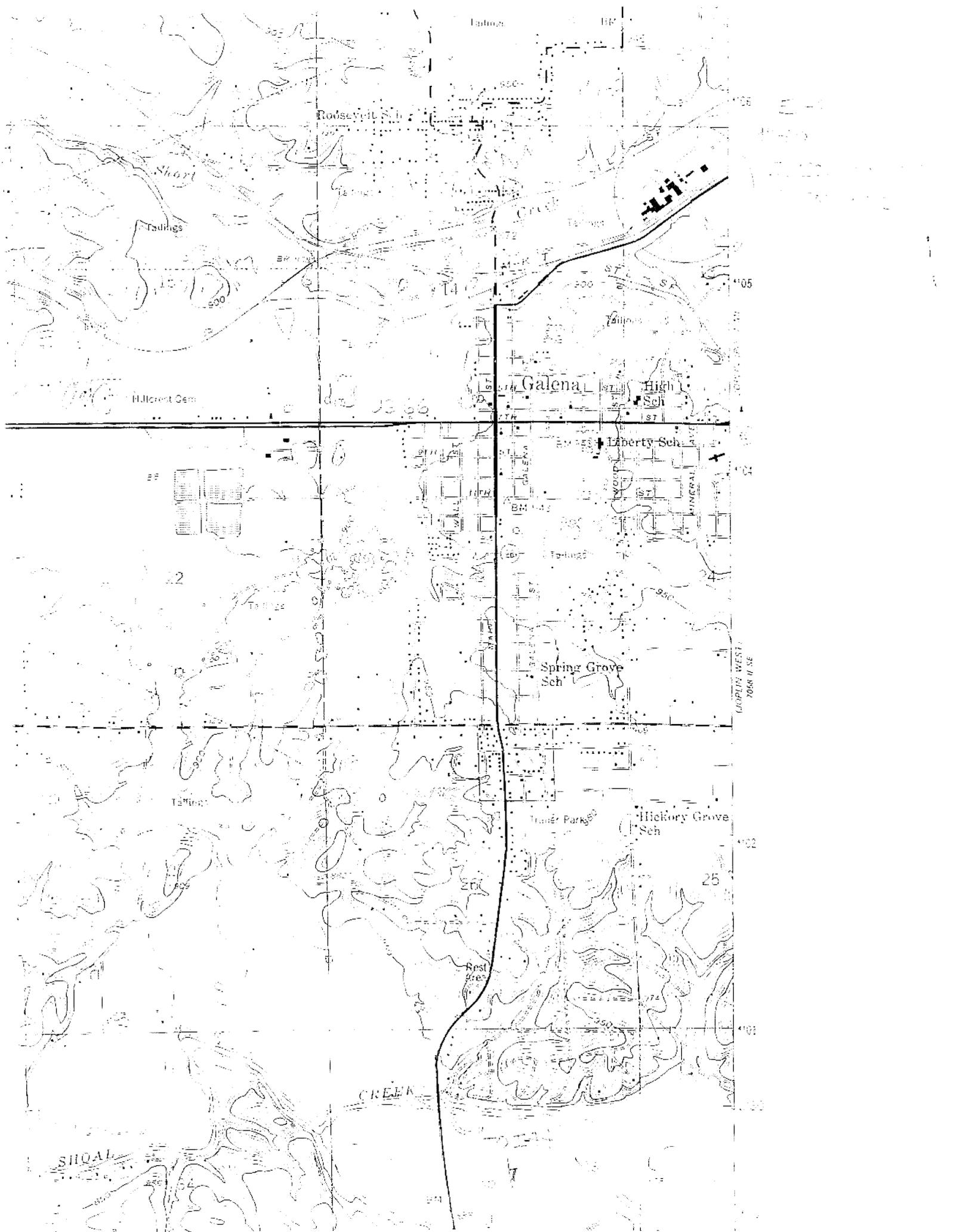
6 Sewer System Y City _____ Septic Tank _____ Condition Code G

7 Yard Lighting Poles 3 (Number) Condition Code G

8 Additional land improvements such as sidewalks, signs, flag poles. Give quantity and condition code. A NEW WALKWAY WAS INSTALLED WITH TWO
FIRE HYDRANTS AND A NEW SECURITY POLICE ARMS
DEPARTMENT BUILDING AND A NEW WALKWAY WAS INSTALLED. E-P OWNS
THE HIGH VOLTAGE ELECTRIC SUBSTATION AND THE PLANT
SITES.

Domestic Owned Location Summary

NO.	Location		Use or ID	Division
1	Lubbock	TX	Construction Products	CED
2	Cincinnati	OH	Industrial Machinery	CIM
3	Philadelphia	PA	Printed Coated Paper	FP
4	River Rouge	MI	Printed Coated Paper	FP
5	Riverton	NJ	Fabricon Products	FP
6	Jonesville	MI	Hillsdale	HI
7	Hillsdale	MI	Oak Street	HI
8	Hillsdale	MI	Tech Development	HI
9	Hillsdale	MI	South Street	HI
10	Hillsdale	MI	Industrial Drive	HI
11	Hillsdale	MI	Rubber Products	HI
12	Hamilton	IN	Hillsdale-Hamilton	HI
13	Lovelock	NV	Minerals	MIN
14	Clark Station	NV	Minerals	MIN
15	Vale	OR	Minerals	MIN
16	Grabill	IN	Plastics	PL
17	Ashley	IN	Plastics	PL
18	Huntington	IN	Plastics	PL
19	Sidney	OH	Warehouse	RAF
20	Sidney	OH	Aluminum Foundry	RAF
21	Sidney	OH	Aluminum Foundry	RAF
22	Norwich	CT	Rubber Moulding-Orcomatic	RM
23	Stratford	CT	Rubber Moulding-Orcomatic	RM
24	Paris	IL	Injection Moulding	SS
25	Quapaw	OK	Speciality Materials Electro Optics	TECH
26	Miami	OK	Lab & Distribution	TECH
27	Grove	OK	Lead Acid Batteries	TECH
28	Quapaw	OK	Speciality Materials Boron	TECH
29	Colorado Springs	CO	Electronics-Power Systems	TECH
30	Joplin	MO	Speciality Lead Chemicals	TECH
31	Joplin	MO	Nickle-Hydrogen Batteries	TECH
32	Joplin	MO	Battery Systems	TECH
33	Joplin	MO	Sheet Metal Parts	TECH
34	Harrisonville	MO	Speciality Materials Chemsyn	TECH
35	Stella	MO	Sheet Metal Fabrication	TECH
36	Joplin	MO	Energetic Devices	TECH
37	Lenexa	KS	Speciality Materials	TECH
38	Joplin	MO	Nickle-Iron and Other Batteries	TECH
39	Seneca	MO	Sealed Lead-Acid Batteries	TECH
40	Galena	KS	Electronics-Chemicals	TECH
41	Inkster	MI	Automotive Sales Office	TRIM
42	Kalkaska	MI	Auto Interior Trim	TRIM
43	Inkster	MI	Wolverine	WG
44	Leesburg	FL	Wolverine	WG
45	Blacksburg	VA	Rubber Coated Metals	WG
46	Blacksburg	VA	Rubber Coated Metals	WG
47	Denton	TX	GO	GO
48	Houston	TX	GO	GO







GULF STATES ANALYTICAL, INC.
5450 Northwest Central Drive, Suite 110
Houston, Texas 77092, (713) 690-4444, FAX (713) 690-4445

09/17/90

Ms. Sandra Pelowski
ERM, Inc.
3025 Boardwalk Drive Suite 200
Ann Arbor, MI 48108

Reference:
Project: Fabricon
Project No.: 721-03-32
GSAI Group: 2310

Dear Ms. Sandra Pelowski:

Enclosed are the analytical results for your project referenced above. The following samples are included in the report.

30140 MW-1 30140 MW-2 30140 MW-3
30140 MW-4

All holding times were met for tests performed on these samples.

Our A2LA membership requires that, should this report be reproduced, it must be reproduced in total.

If the report is acceptable, please approve the enclosed invoice and forward it for payment.

Thank you for selecting Gulf States Analytical, Inc. to serve as your analytical laboratory on this project. If you have any questions concerning these results, please feel free to contact me at any time.

We look forward to working with you on future projects.

Sincerely yours,

Kathleen Eaves
Project Manager

MI0012417

RESULTS ANALYTICAL INC.

3025 Boardwalk Drive Suite 200

ANALYSIS REPORT

ERM, Inc.
 3025 Boardwalk Drive Suite 200
 Ann Arbor, MI 48108
 Attn: Ms. Sandra Pelowski
 Project: Fabricon
 Matrix: Water
 Sample ID: 3-0193 MW-1
 GSAI Sample: 14324
 GSAI Group: 2392
 Date Reported: 09/25/90
 Discard Date: 10/25/90
 Date Submitted: 08/24/90
 Date Sampled: 08/23/90
 Collected by: CB
 Purchase Order:
 Sales Order: 1817
 Project No.: 721-03-32

Test	Analysis	Results	Units	Limit of
		as Received		Quantitation
0244	Antimony by Flame AA Method: EPA 204.1	ND	mg/l	0.2
0247	Beryllium by Flame AA Method: EPA 210.1	ND	mg/l	0.5
0249	Cadmium by Flame AA Method: EPA 213.1	ND	mg/l	0.01
0251	Chromium by Flame AA Method: EPA 218.1	0.11	mg/l	0.02
0253	Copper by Flame AA Method: EPA 220.1	0.14	mg/l	0.05
0255	Lead by Flame AA Method: EPA 239.1	ND	mg/l	0.1
0259	Mercury by Cold Vapor AA Method: EPA 245.1	ND	ug/l	0.5
0261	Nickel by Flame AA Method: EPA 249.1	0.16	mg/l	0.05
0266	Silver by Flame AA Method: EPA 272.1	ND	mg/l	0.01
0272	Zinc by Flame AA Method: EPA 289.1	0.50	mg/l	0.02
0422	Thallium by Flame AA Method: EPA 279.1	ND	mg/l	0.5

Test Analysis	Results as Received	Units	Limit of Quantitation
1045 Arsenic by Furnace AA Method: EPA 206.2	ND	ug/l	10
1064 Selenium by Furnace AA Method: EPA 270.2	ND	ug/l	5

ERM, Inc.
 Sample ID: 3-0193 MW-1

GSAI Sample: 14324
 GSAI Group: 2392

ND = Not detected at the limit of quantitation

Respectfully Submitted,
 Gulf States Analytical, Inc.
 Reviewed and Approved by:

Kathleen Eaves

Kathleen Eaves
 Project Manager

GULF STATES ANALYTICAL, INC.

5430 Northpark Central Express, Suite 117

Houston, Texas 77092, (713) 690-4444, FAX (713) 690-5646

ANALYSIS REPORT

GSAI Sample: 13910
 GSAI Group: 2310
 Date Reported: 09/17/90
 Discard Date: 10/17/90
 Date Submitted: 09/07/90
 Date Sampled: 09/06/90
 Collected by: CB
 Purchase Order:
 Sales Order: 1888
 Project No.: 721-03-32

ERM, Inc.
 3025 Boardwalk Drive Suite 200
 Ann Arbor, MI 48108
 Attn: Ms. Sandra Pelowski
 Project: Fabricon
 Matrix: Water
 Sample ID: 30140 MW-1

Limit of	Units	Results	Test Analysis
Quantitation		as Received	Priority Pollutant VOA

0520 Method: EPA 624

50	ug/l	ND	Acrolein
30	ug/l	ND	Acrylonitrile
5	ug/l	ND	Benzene
5	ug/l	ND	Bromoform
5	ug/l	ND	Carbon tetrachloride
5	ug/l	ND	Chlorobenzene
5	ug/l	ND	Chlorodibromomethane
5	ug/l	ND	Chloroethane
10	ug/l	ND	2-Chloroethylvinyl ether
5	ug/l	ND	Chloroform
5	ug/l	ND	Dichlorobromomethane
5	ug/l	ND	1,1-Dichloroethane
5	ug/l	ND	1,2-Dichloroethane
5	ug/l	ND	1,1-Dichloroethylene
5	ug/l	ND	trans-1,2-Dichloroethylene
5	ug/l	ND	1,2-Dichloropropane
5	ug/l	ND	cis-1,3-Dichloropropylene
5	ug/l	ND	trans-1,3-Dichloropropylene
5	ug/l	ND	Ethylbenzene
10	ug/l	ND	Methyl bromide
10	ug/l	ND	Methyl chloride
5	ug/l	ND	Methylene chloride
5	ug/l	ND	1,1,2,2-Tetrachloroethane
5	ug/l	ND	Tetrachloroethylene
5	ug/l	ND	Toluene

GSAI Sample: 13910
 GSAI Group: 2310

ERM, Inc.
 Sample ID: 30140 MW-1

est Analysis	Results as Received	Units	Limit of Quantitation
0520 Priority Pollutant VOA	ND	ug/l	5
Method: EPA 624	ND	ug/l	5
1,1,1-Trichloroethane	ND	ug/l	5
1,1,2-Trichloroethane	ND	ug/l	5
Trichloroethylene	ND	ug/l	5
Trichlorofluoromethane	ND	ug/l	5
Vinyl chloride	ND	ug/l	10
:2308 Library Search, Alcohols	See Attached	mg/l	
Method:			

ND = Not detected at the limit of quantitation

Respectfully Submitted,
 Gulf States Analytical, Inc.
 Reviewed and Approved by:

Kathleen Faves

Kathleen Faves
 Project Manager

LIBRARY SEARCH
ALCOHOLS

Client: ERM, Inc. Group No.: 2310
Client Sample No.: 30140 MW-1 GSAI Sample No.: 13910

Concentration Units: ug/l

EST. CONC.	RT	COMPOUND NAME
		No Alcohols Found

UNITED STATES ENVIRONMENTAL AGENCY

LABORATORY REPORT

ANALYSIS REPORT

GSAI Sample: 14325
 GSAI Group: 2392
 Date Reported: 09/25/90
 Discard Date: 10/25/90
 Date Submitted: 08/24/90
 Date Sampled: 08/23/90
 Collected by: CB
 Purchase Order:
 Sales Order: 1817
 Project No.: 721-03-32

ERM, Inc.
 3025 Boardwalk Drive Suite 200
 Ann Arbor, MI 48108
 Attn: Ms. Sandra Pelowski
 Project: Fabricon
 Matrix: Water
 Sample ID: 3-0193 MW-2

Test	Analysis	Results as Received	Units	Limit of Quantitation
0244	Antimony by Flame AA Method: EPA 204.1	ND	mg/l	0.2
0247	Beryllium by Flame AA Method: EPA 210.1	ND	mg/l	0.5
0249	Cadmium by Flame AA Method: EPA 213.1	ND	mg/l	0.01
0251	Chromium by Flame AA Method: EPA 218.1	0.14	mg/l	0.02
0253	Copper by Flame AA Method: EPA 220.1	0.31	mg/l	0.05
0255	Lead by Flame AA Method: EPA 239.1	ND	mg/l	0.1
0259	Mercury by Cold Vapor AA Method: EPA 245.1	ND	ug/l	0.5
0261	Nickel by Flame AA Method: EPA 249.1	0.16	mg/l	0.05
0266	Silver by Flame AA Method: EPA 272.1	ND	mg/l	0.01
0272	Zinc by Flame AA Method: EPA 289.1	0.55	mg/l	0.02
0422	Thallium by Flame AA Method: EPA 279.1	ND	mg/l	0.5

ERM, Inc.

Sample ID: 3-0193 MW-2

Test Analysis	Results as Received	Units	Limit of Quantitation
1045 Arsenic by Furnace AA Method: EPA 206.2	11	ug/l	10
1064 Selenium by Furnace AA Method: EPA 270.2	ND	ug/l	5

GSAI Sample: 14325
GSAI Group: 2392

ND = Not detected at the limit of quantitation

Respectfully Submitted,
Gulf States Analytical, Inc.
Reviewed and Approved by:

Kathleen Eaves

Kathleen Eaves
Project Manager



GRIFFIN ANALYTICAL, INC.
 8477 Northway Road, Suite 110
 Houston, Texas 77097, (713) 693-4444, FAX (713) 693-5666

ANALYSIS REPORT

ERM, Inc.
 3025 Boardwalk Drive Suite 200
 Ann Arbor, MI 48108
 Attn: Ms. Sandra Pelowski
 Project: Fabricon
 Matrix: Water
 Sample ID: 30140 MW-2

GSAI Sample: 13911
 GSAI Group: 2310
 Date Reported: 09/17/90
 Discard Date: 10/17/90
 Date Submitted: 09/07/90
 Date Sampled: 09/06/90
 Collected by: CB
 Purchase Order:
 Sales Order: 1888
 Project No.: 721-03-32

Test	Analysis	Results as Received	Units	Limit of Quantitation
0520	Priority Pollutant VOA			
	Method: EPA 624			
	Acrolein	ND	ng/l	50
	Acrylonitrile	ND	ng/l	30
	Benzene	ND	ng/l	5
	Bromoform	ND	ng/l	5
	Carbon tetrachloride	ND	ng/l	5
	Chlorobenzene	ND	ng/l	5
	Chlorodibromomethane	ND	ng/l	5
	Chloroethane	ND	ng/l	10
	2-Chloroethylvinyl ether	ND	ng/l	5
	Chloroform	ND	ng/l	5
	Dichlorobromomethane	ND	ng/l	5
	1,1-Dichloroethane	ND	ng/l	5
	1,2-Dichloroethane	ND	ng/l	5
	1,1-Dichloroethylene	ND	ng/l	5
	trans-1,2-Dichloroethylene	ND	ng/l	5
	1,2-Dichloropropane	ND	ng/l	5
	cis-1,3-Dichloropropylene	ND	ng/l	5
	trans-1,3-Dichloropropylene	ND	ng/l	5
	Ethylbenzene	ND	ng/l	5
	Methyl bromide	ND	ng/l	10
	Methyl chloride	ND	ng/l	10
	Methylene chloride	ND	ng/l	5
	1,1,2,2-Tetrachloroethane	ND	ng/l	5
	Tetrachloroethylene	ND	ng/l	5
	Toluene	ND	ng/l	5

GSAI Sample: 13911
 GSAI Group: 2310

ERM, Inc.
 Sample ID: 30140 MW-2

Test Analysis	Results as Received	Units	Limit of Quantitation
0520 Priority Pollutant VOA Method: EPA 624	ND	ug/l	5
1,1,1-Trichloroethane	ND	ug/l	5
1,1,2-Trichloroethane	ND	ug/l	5
Trichloroethylene	ND	ug/l	5
Trichlorofluoromethane	ND	ug/l	5
Vinyl chloride	ND	ug/l	10
32308 Library Search, Alcohols Method:	See Attached	mg/l	

ND = Not detected at the limit of quantitation

Respectfully Submitted,
 Gulf States Analytical, Inc.
 Reviewed and Approved by:

Kathleen Faves

Kathleen Faves
 Project Manager

LIBRARY SEARCH
ALCOHOLS

Client: ERM, Inc. Group No.: 2310
Client Sample No.: 30140 MW-2 GSAI Sample No.: 13911

EST. CONC.	RT	COMPOUND NAME
		No Alcohols Found

Concentration Units: ug/l



ENVIRONMENTAL ANALYTICAL LABORATORY

ANALYSIS REPORT

HRM, Inc.
 3025 Boardwalk Drive Suite 200
 Ann Arbor, MI 48108
 Attn: Ms. Sandra Pelowski
 Project: Fabricon
 Matrix: Water
 Sample ID: 3-0193 MW-3
 GSAI Sample: 14326
 GSAI Group: 2392
 Date Reported: 09/25/90
 Discard Date: 10/25/90
 Date Submitted: 08/24/90
 Date Sampled: 08/23/90
 Collected by: CB
 Purchase Order:
 Sales Order: 1817
 Project No.: 721-03-32

Test	Analysis	Results	Units	Limit of
		as Received		Quantitation
0244	Antimony by Flame AA Method: EPA 204.1	ND	mg/l	0.2
0247	Beryllium by Flame AA Method: EPA 210.1	ND	mg/l	0.5
0249	Cadmium by Flame AA Method: EPA 213.1	ND	mg/l	0.01
0251	Chromium by Flame AA Method: EPA 218.1	0.04	mg/l	0.02
0253	Copper by Flame AA Method: EPA 220.1	0.13	mg/l	0.05
0255	Lead by Flame AA Method: EPA 239.1	ND	mg/l	0.1
0259	Mercury by Cold Vapor AA Method: EPA 245.1	ND	ug/l	0.5
0261	Nickel by Flame AA Method: EPA 249.1	ND	mg/l	0.05
0266	Silver by Flame AA Method: EPA 272.1	ND	mg/l	0.01
0272	Zinc by Flame AA Method: EPA 289.1	0.24	mg/l	0.02
0422	Thallium by Flame AA Method: EPA 279.1	ND	mg/l	0.5

Test Analysis	Results as Received	Units	Limit of Quantitation
1045 Arsenic by Furnace AA Method: EPA 206.2	15	ug/l	10
1064 Selenium by Furnace AA Method: EPA 210.2	ND	ug/l	5

ERM, Inc.
Sample ID: 3-0193 MW-3
GSAI Sample: 14326
GSAI Group: 2392

ND = Not detected at the limit of quantitation

Respectfully Submitted,
Gulf States Analytical, Inc.
Reviewed and Approved by:

Kathleen Courts

Kathleen Eaves
Project Manager



UNITED STATES ENVIRONMENTAL AGENCY

430 North West Grand Prairie Avenue, Suite 100

Irving, Texas 75039-1171, (972) 690-4444, FAX (714) 690-5646

ANALYSIS REPORT

GSAI Sample: 13912
 GSAI Group: 2310
 Date Reported: 09/17/90
 Discard Date: 10/17/90
 Date Submitted: 09/07/90
 Date Sampled: 09/06/90
 Collected by: CB
 Purchase Order:
 Sales Order: 1888
 Project No.: 721-03-32

ERM, Inc.
 3025 Boardwalk Drive Suite 200
 Ann Arbor, MI 48108
 Attn: Ms. Sandra Pelowski
 Project: Fabricon
 Matrix: Water
 Sample ID: 30140 MW-3

Test Analysis Results as Received Units Limit of Quantitation

0520 Priority Pollutant VOA Method: EPA 624

Test Analysis	Results as Received	Units	Limit of Quantitation
Acrolein	ND	ug/l	50
Acrylonitrile	ND	ug/l	30
Benzene	ND	ug/l	5
Bromoform	ND	ug/l	5
Carbon tetrachloride	ND	ug/l	5
Chlorobenzene	ND	ug/l	5
Chlorodibromomethane	ND	ug/l	5
Chloroethane	ND	ug/l	5
2-Chloroethylvinyl ether	ND	ug/l	10
Chloroform	ND	ug/l	5
Dichlorobromomethane	ND	ug/l	5
1,1-Dichloroethane	ND	ug/l	5
1,2-Dichloroethane	ND	ug/l	5
1,1-Dichloroethylene	ND	ug/l	5
trans-1,2-Dichloroethylene	ND	ug/l	5
1,2-Dichloropropane	ND	ug/l	5
cis-1,3-Dichloropropylene	ND	ug/l	5
trans-1,3-Dichloropropylene	ND	ug/l	5
Ethylbenzene	ND	ug/l	5
Methyl bromide	ND	ug/l	10
Methyl chloride	ND	ug/l	10
Methylene chloride	ND	ug/l	5
1,1,2,2-Tetrachloroethane	ND	ug/l	5
Tetrachloroethylene	ND	ug/l	5
Toluene	ND	ug/l	5

GSAI Sample: 13912
 GSAI Group: 2310

ERM, Inc.
 Sample ID: 30140 MW-3

Test Analysis	Results as Received	Units	Limit of Quantitation
0520 Priority Pollutant VOA Method: EPA 624	ND	ug/l	5
1,1,1-Trichloroethane	ND	ug/l	5
1,1,2-Trichloroethane	ND	ug/l	5
Trichloroethylene	ND	ug/l	5
Trichlorofluoromethane	ND	ug/l	5
Vinyl chloride	ND	ug/l	10
G2308 Library Search, Alcohols Method:	See Attached	mg/l	

ND = Not detected at the limit of quantitation

Respectfully Submitted,
 Gulf States Analytical, Inc.
 Reviewed and Approved by:

Kathleen Eaves

Kathleen Eaves
 Project Manager



CHIEF STAFFS ANALYTICAL UNIT

3430 Northway Central Drive, Suite 110

Lansing, Texas 77391 (713) 690-4444 FAX (713) 690-5046

ANALYSIS REPORT

ERM, Inc.
 3025 Boardwalk Drive Suite 200
 Ann Arbor, MI 48108
 Attn: Ms. Sandra Pelowski
 Project: Fabricon
 Matrix: Water
 Sample ID: 30140 MW-4

GSAI Sample: 13913
 GSAI Group: 2310
 Date Reported: 09/17/90
 Discard Date: 10/17/90
 Date Submitted: 09/07/90
 Date Sampled: 09/06/90
 Collected by: CB
 Purchase Order:
 Sales Order: 1888
 Project No.: 721-03-32

Test	Analysis	Results as Received	Units	Limit of Quantitation
0520	Priority Pollutant VOA			
	Method: EPA 624			
	Acrolein	ND	ug/l	50
	Acrylonitrile	ND	ug/l	30
	Benzene	ND	ug/l	5
	Bromoform	ND	ug/l	5
	Carbon tetrachloride	ND	ug/l	5
	Chlorobenzene	ND	ug/l	5
	Chlorodibromomethane	ND	ug/l	5
	Chloroethane	ND	ug/l	5
	2-Chloroethylvinyl ether	ND	ug/l	10
	Chloroform	ND	ug/l	5
	Dichlorobromomethane	ND	ug/l	5
	1,1-Dichloroethane	ND	ug/l	5
	1,2-Dichloroethane	ND	ug/l	5
	1,1-Dichloroethylene	ND	ug/l	5
	trans-1,2-Dichloroethylene	ND	ug/l	5
	1,2-Dichloropropane	ND	ug/l	5
	cis-1,3-Dichloropropylene	ND	ug/l	5
	trans-1,3-Dichloropropylene	ND	ug/l	5
	Ethylbenzene	ND	ug/l	5
	Methyl bromide	ND	ug/l	10
	Methyl chloride	ND	ug/l	10
	Methylene chloride	ND	ug/l	5
	1,1,2,2-Tetrachloroethane	ND	ug/l	5
	Tetrachloroethylene	ND	ug/l	5
	Toluene	ND	ug/l	5

ERM, Inc.

Sample ID: 30140 MW-4

Test Analysis

G2308 Library Search, Alcohols
Method:

Results

as Received

See Attached

Units

mg/l

Limit of

Quantitation

GSAI Sample: 13913

GSAI Group: 2310

ND = Not detected at the limit of quantitation

Respectfully Submitted,
Gulf States Analytical, Inc.
Reviewed and Approved by:

Kathleen Eaves

Kathleen Eaves
Project Manager

LIBRARY SEARCH
ALCOHOLS

Client: ERM, Inc. Client Sample No.: 30140 MW-4
Group No.: 2310 GSAI Sample No.: 13913

Concentration Units: ug/l

EST. CONC.	RT	COMPOUND NAME
		No Alcohols Found



Traffic Report

1 Project W.O. 721-03-32		2 Sample Concentration <input checked="" type="checkbox"/> Low Concentration		3 Ship to: 3-0140	
Project Name/Location FABRISON		4 Sample Matrix <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Solid		Attn: <u>Kathy EARS</u>	
River Rouge		5 Sampling Personnel Contact C. Banks		Houston TX	
Project Manager: S. Pelomku		6 Shipping Information (Name of Carrier) <u>FED EX</u>		5450 NW Center Dr	
Date Shipped: 9/6/90		7 Specify Type of Analyses, Number of Containers, Approx. Volume		Gulf States Analytical	
(Airbill Number) 8100420860		Analyses / Method Requested Volatiles/EPA 601/602		No. of Bottles	
Sample Location MW-1, MW-2, MW-3, MW-4		Alcohols EPA 8015		Total Volume	
Date: 9/6/90		8 Sample Description Surface Water <input type="checkbox"/> Soil <input type="checkbox"/> Ground Water <input checked="" type="checkbox"/> Solid <input type="checkbox"/> Leachate <input type="checkbox"/> Other: <input type="checkbox"/>		10 Bottles	
Time:		9 Sample Description * 5 Day Turnaround *		Additional comments: (Specify data package, rush work, special detection limits, etc.)	
11 Condition of Samples Received (to be completed by Laboratory Log-in.)		Sediment <input type="checkbox"/>		Keep at 4°C	
<input checked="" type="checkbox"/> Samples received intact		<input checked="" type="checkbox"/> Container tags match Chain of Custody		Log-in Person's Signature <u>[Signature]</u> 9/4/90	
<input checked="" type="checkbox"/> Samples at 4 degrees (C) 16°		<input checked="" type="checkbox"/> Container numbers match as specified in Item 7		Samples contained within plastic bags <input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/> Samples not leaking		<input checked="" type="checkbox"/> Cooler received with Custody Seals intact			

Copies: White & Yellow copies accompany sample shipment to laboratory. Yellow copy retained by laboratory. White copy to be returned to ERM for files. Pink copy retained by sampler. Gold copy extra as needed.

Traffic Report

1 Project W.O. 7/1-03-32		2 Sample Concentration		<input checked="" type="checkbox"/> Low Concentration	Project Name/Location Fibrona	
3 Ship to: 3-0193		5 Sampling Personnel Contact Gulf State Analytical		<input type="checkbox"/> Medium Concentration	River Rouge	
4 Sample Matrix		Sampler: C. Bost		<input checked="" type="checkbox"/> Liquid	Fibrona	
Project Manager: J. Pelowski		Attn: KATHY EAVES		<input type="checkbox"/> Solid	River Rouge	
Phone No. (313) 971-0551		Houston tx 77092		Other <input type="checkbox"/>		
6 Shipping Information		7 Specify Type of Analyses, Number of Containers, Approx. Volume		8 Sample Location		
(Name of Carrier) FedEx		Analyses / Method Requested		MW-1, MW-2, MW-3, MW-4		
Date Shipped 8/23/90		No. of Bottles 8		Date: 8/23/90		
(Airbill Number) 7370688002		Volatile ORGANICS		Time: 1400		
EPA 601/602		Priority Pollutants		Date: 8/23/90		
Priority Pollutants		Alcohols 8015		Date: 8/23/90		
MW-1, MW-2, MW-3, MW-4		4		Date: 8/23/90		
9 Sample Description		10 Special Handling (e.g. Safety Procedures/Hazardous)		Date: 8/23/90		
Surface Water <input type="checkbox"/>		* Two week turnaround		Date: 8/23/90		
Ground Water <input checked="" type="checkbox"/>				Date: 8/23/90		
Leachate <input type="checkbox"/>				Date: 8/23/90		
Other: <input type="checkbox"/>				Date: 8/23/90		
Sediment <input type="checkbox"/>				Date: 8/23/90		
11 Condition of Samples Received (to be completed by Laboratory Log-in.)				Date: 8/23/90		
Samples received intact <input checked="" type="checkbox"/>				Date: 8/23/90		
Samples at 4 degrees (C) <input checked="" type="checkbox"/>				Date: 8/23/90		
Samples not leaking <input checked="" type="checkbox"/>				Date: 8/23/90		
Container numbers match as specified in Item 7 <input checked="" type="checkbox"/>				Date: 8/23/90		
Container tags match Chain of Custody <input checked="" type="checkbox"/>				Date: 8/23/90		
Cooler received with Custody Seals intact <input checked="" type="checkbox"/>				Date: 8/23/90		
Samples contained within plastic bags <input checked="" type="checkbox"/>				Date: 8/23/90		

Log-In Person's Signature

Copies: White & Yellow copies accompany sample shipment to laboratory. Yellow copy retained by laboratory. White copy to be returned to ERM for files. Pink copy retained by sampler. Gold copy extra copy as needed.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 4830 Northway Court, Detroit, Michigan 48202
 (313) 234-3700

ANALYSIS REPORT

GSAI Sample: 13385
 GSAI Group: 2216
 Date Reported: 09/05/90
 Discard Date: 10/05/90
 Date Submitted: 08/22/90
 Date Sampled: 08/20/90
 Collected by: CB
 Project: Fabriccon
 Attn: Ms. Sandra Pelowski
 3025 Boardwalk Drive Suite 200
 Ann Arbor, MI 48108
 Matrix: Soil
 Sample ID: SB-14 3.5'-4.0'
 GSAI Sample: 13385
 GSAI Group: 2216
 Date Reported: 09/05/90
 Discard Date: 10/05/90
 Date Submitted: 08/22/90
 Date Sampled: 08/20/90
 Collected by: CB
 Project: Fabriccon
 Attn: Ms. Sandra Pelowski
 3025 Boardwalk Drive Suite 200
 Ann Arbor, MI 48108
 Matrix: Soil
 Sample ID: SB-14 3.5'-4.0'
 Sales Order: 1801
 Project No.: 721-03-32

Test	Analysis	Results as Received	Units	Limit of Quantitation
0111	Moisture Method: EPA 160.3	16.5	%	0.1
0151	Chromium by Flame AA Method: SW-846 7190	28	mg/kg	2
0155	Lead by Flame AA Method: SW-846 7420	120	mg/kg	10
0172	Zinc by Flame AA Method: SW-846 7950	170	mg/kg	2
0348	Total Petroleum Hydrocarbons Method: EPA 418.1 MOD	381	mg/kg	50
1145	Arsenic by Furnace AA Method: SW-846 7060	5.8	mg/kg	1.0
1164	Selenium by Furnace AA Method: SW-846 7740	ND	mg/kg	0.5
6738	Purgeable Aromatic/Halocarbons, GC Method: SW-846 8010/8020	ND	ug/kg	20
	Benzene	ND	ug/kg	20
	Bromodichloromethane	ND	ug/kg	20
	Bromomethane	ND	ug/kg	40
	Bromochloromethane	ND	ug/kg	100
	Carbon tetrachloride	ND	ug/kg	20
	Chlorobenzene	ND	ug/kg	20
	Chloroethane	ND	ug/kg	20
	2-Chloroethylvinyl ether	ND	ug/kg	200
	Chloroform	ND	ug/kg	20

ERM, Inc.

Sample ID: SR-14 3.5'-4.0'

GSAI Sample: 13385
 GSAI Group: 2216

Test	Analysis	Results as Received	Units	Limit of Quantitation
6738	Purgeable Aromatic/Halocarbons, GC	Chloromethane	ug/kg	100
	Method: SW-846 8010/8020	Dibromochloromethane	ug/kg	20
		1,2-Dichlorobenzene	ug/kg	20
		1,3-Dichlorobenzene	ug/kg	20
		1,4-Dichlorobenzene	ug/kg	20
		1,1-Dichloroethane	ug/kg	20
		1,2-Dichloroethane	ug/kg	20
		trans-1,2-Dichloroethene	ug/kg	20
		1,2-Dichloropropane	ug/kg	20
		cis-1,3-Dichloropropene	ug/kg	20
		trans-1,3-Dichloropropene	ug/kg	20
		Ethylbenzene	ug/kg	20
		Methylene chloride	ug/kg	20
		1,1,2-Tetrachloroethane	ug/kg	40
		Tetrachloroethylene	ug/kg	20
		1,1,1-Trichloroethane	ug/kg	20
		1,1,2-Trichloroethane	ug/kg	20
		Trichloroethene	ug/kg	20
		Trichlorofluoromethane	ug/kg	20
		Toluene	ug/kg	20
		Vinyl chloride	ug/kg	20
		p-Xylene	ug/kg	20
		m-Xylene	ug/kg	20
		o-Xylene	ug/kg	20

ND = Not detected at the limit of quantitation

Respectfully Submitted,
 Gulf States Analytical, Inc.
 Reviewed and Approved by:

Kathleen Eaves

Kathleen Eaves
 Project Manager



GULF STATES ANALYTICAL, INC.
 340 Northwest 10th Street, Suite 110
 Ft. Lauderdale, Florida 33304

Phone: (305) 555-1111 Fax: (305) 555-1111

ANALYSIS REPORT

FRM, Inc.
 3025 Boardwalk Drive Suite 200
 Ann Arbor, MI 48108
 Attn: Ms. Sandra Pelowski
 Project: Fabricon
 Matrix: Soil
 Sample ID: 3-0192 SB-15 77-97

GSAI Sample: 13325
 GSAI Group: 2196
 Date Reported: 09/04/90
 Discard Date: 10/04/90
 Date Submitted: 08/20/90
 Date Sampled: 08/17/90
 Collected by: CB
 Purchase Order:
 Sales Order: 1784
 Project No.: 721-03-32-01

Test	Analysis	Results as Received	Units	Limit of Quantitation
0111	Moisture	16.3	%	0.1
0144	Antimony by Flame AA	ND	mg/kg	20
0147	Beryllium by Flame AA	ND	mg/kg	0.5
0149	Cadmium by Flame AA	1	mg/kg	1
0151	Chromium by Flame AA	25	mg/kg	2
0153	Copper by Flame AA	377	mg/kg	5
0155	Lead by Flame AA	134	mg/kg	10
0159	Mercury by Cold Vapor AA	ND	mg/kg	0.25
0161	Nickel by Flame AA	10	mg/kg	5
0166	Silver by Flame AA	ND	mg/kg	1
0172	Zinc by Flame AA	290	mg/kg	2

Method: SW-846 7040
 Method: SW-846 7090
 Method: SW-846 7130
 Method: SW-846 7190
 Method: SW-846 7210
 Method: SW-846 7420
 Method: SW-846 7471
 Method: SW-846 7520
 Method: SW-846 7760
 Method: SW-846 7950

GSAI Sample: 13325
 GSAI Group: 2196

ERM, Inc.
 Sample ID: 3-0192 SR-15 71.9'

Test Analysis	Results as Received	Units	Limit of Quantitation
0348 Total Petroleum Hydrocarbons Method: EPA 418.1 MOD	172	mg/kg	10
0525 Thallium by Flame AA Method: SW-846 7840	ND	mg/kg	50
0969 Methanol Method: SW-846 8000	ND	mg/kg	5,000
1145 Arsenic by Furnace AA Method: SW-846 7060	1.7	mg/kg	1.0
1164 Selenium by Furnace AA Method: SW-846 7740	ND	mg/kg	0.5
5738 Purgeable Aromatic/Halocarbons, GC Method: SW-846 8010/8020	101	ug/kg	20
Benzene	ND	ug/kg	20
Bromodichloromethane	ND	ug/kg	20
Bromoforn	ND	ug/kg	40
Bromomethane	ND	ug/kg	100
Carbon tetrachloride	ND	ug/kg	20
Chlorobenzene	ND	ug/kg	20
Chloroethane	ND	ug/kg	20
2-Chloroethylvinyl ether	ND	ug/kg	200
Chloroforn	ND	ug/kg	20
Chloromethane	ND	ug/kg	100
Dibromochloromethane	ND	ug/kg	20
1,2-Dichlorobenzene	ND	ug/kg	20
1,3-Dichlorobenzene	ND	ug/kg	20
1,4-Dichlorobenzene	ND	ug/kg	20
1,1-Dichloroethane	ND	ug/kg	20
1,2-Dichloroethane	ND	ug/kg	20
1,1-Dichloroethane	ND	ug/kg	20
trans-1,2-Dichloroethene	ND	ug/kg	20
1,2-Dichloropropane	ND	ug/kg	20
cis-1,3-Dichloropropene	ND	ug/kg	20
trans-1,3-Dichloropropene	ND	ug/kg	20
Ethylbenzene	ND	ug/kg	20
Methylene chloride	ND	ug/kg	20

GSAI Sample: 13325
 GSAI Group: 2196

Sample ID: 3-0192 SB-15 77-9'

ERM, Inc.

Test Analysis	Results as Received	Units	Limit of Quantitation
6738 Purgeable Aromatic/Halocarbons, GC	ND	ug/kg	40
Method: SW-846 8010/8020	ND	ug/kg	20
1,1,2-Tetrachloroethane	ND	ug/kg	20
Tetrachloroethylene	ND	ug/kg	20
1,1,1-Trichloroethane	ND	ug/kg	20
1,1,2-Trichloroethane	ND	ug/kg	20
Trichloroethene	ND	ug/kg	20
Trichlorofluoromethane	ND	ug/kg	20
Toluene	103	ug/kg	20
Vinyl chloride	ND	ug/kg	20
p-Xylene	117	ug/kg	20
m-Xylene	ND	ug/kg	20
o-Xylene	ND	ug/kg	20

ND = Not detected at the limit of quantitation

Respectfully Submitted,
 Gulf States Analytical, Inc.
 Reviewed and Approved by:

Kathleen Eaves

Kathleen Eaves
 Project Manager



GOLF STATES ANALYTICAL, INC.

4500 N. Highway 100, Suite 110

Hamlet, NC 27927 (717) 693-4444 FAX (717) 693-5696

ANALYSIS REPORT

GSAI Sample: 13326
 GSAI Group: 2196
 Date Reported: 09/04/90
 Discard Date: 10/04/90
 Date Submitted: 08/20/90
 Date Sampled: 08/17/90
 Collected by: CB
 Purchase Order:
 Sales Order: 1784
 Project No.: 721-03-32-01

ERM, Inc.
 3025 Boardwalk Drive Suite 200
 Ann Arbor, MI 48108
 Attn: Ms. Sandra Pelowski
 Project: Fabricon
 Matrix: Soil
 Sample ID: 3-0192 SB-16 4.5'-6.5'

Test Analysis	Results as Received	Units	Limit of Quantitation
0111 Moisture Method: EPA 160.3	14.4	%	0.1
0144 Antimony by Flame AA Method: SW-846 7040	ND	mg/kg	20
0147 Beryllium by Flame AA Method: SW-846 7090	ND	mg/kg	0.5
0149 Cadmium by Flame AA Method: SW-846 7130	ND	mg/kg	1
0151 Chromium by Flame AA Method: SW-846 7190	6	mg/kg	2
0153 Copper by Flame AA Method: SW-846 7210	14	mg/kg	5
0155 Lead by Flame AA Method: SW-846 7420	ND	mg/kg	10
0159 Mercury by Cold Vapor AA Method: SW-846 7471	ND	mg/kg	0.25
0161 Nickel by Flame AA Method: SW-846 7520	7	mg/kg	5
0166 Silver by Flame AA Method: SW-846 7760	ND	mg/kg	1
0172 Zinc by Flame AA Method: SW-846 7950	28	mg/kg	2

GSAI Sample: 13326
 GSAI Group: 2196

ERM, Inc.
 Sample ID: 3-0192 SB-16 4.5'-6.5'

Test Analysis	Results as Received	Units	Limit of Quantitation
0348 Total Petroleum Hydrocarbons Method: EPA 418.1 MOD	23	mg/kg	10
0525 Thallium by Flame AA Method: SW-846 7840	ND	mg/kg	50
0969 Methanol Method: SW-846 8000	ND	mg/kg	5,000
1145 Arsenic by Furnace AA Method: SW-846 7060	2.0	mg/kg	1.0
1164 Selenium by Furnace AA Method: SW-846 7740	ND	mg/kg	0.5
6738 Purgeable Aromatic/Halocarbons, GC Method: SW-846 8010/8020	65	ug/kg	20
Bromodichloromethane	ND	ug/kg	20
Bromotorm	ND	ug/kg	40
Bromomethane	ND	ug/kg	100
Carbon tetrachloride	ND	ug/kg	20
Chlorobenzene	ND	ug/kg	20
Chloroethane	ND	ug/kg	20
2-Chloroethylvinyl ether	ND	ug/kg	200
Chloroform	ND	ug/kg	20
Chloromethane	ND	ug/kg	20
Dibromochloromethane	ND	ug/kg	20
1,2-Dichlorobenzene	ND	ug/kg	20
1,3-Dichlorobenzene	ND	ug/kg	20
1,4-Dichlorobenzene	ND	ug/kg	20
1,1-Dichloroethane	ND	ug/kg	20
1,1-Dichloroethene	ND	ug/kg	20
trans-1,2-Dichloroethene	ND	ug/kg	20
1,2-Dichloropropane	ND	ug/kg	20
cis-1,3-Dichloropropene	ND	ug/kg	20
trans-1,3-Dichloropropene	ND	ug/kg	20
Ethylbenzene	ND	ug/kg	20
Methylene chloride	ND	ug/kg	20

GSAI Sample: 13326
 GSAI Group: 2196

Sample ID: 3-0192 SR-16 4.5'-6.5'

ERM, Inc.

Test Analysis	Results as Received	Units	Limit of Quantitation
6738 Purgeable Aromatic/Halocarbons, GC	ND	ug/kg	40
Method: SW-846 8010/8020	ND	ug/kg	20
1,1,2-Tetrachloroethane	ND	ug/kg	20
Tetrachloroethylene	ND	ug/kg	20
1,1,1-Trichloroethane	ND	ug/kg	20
1,1,2-Trichloroethane	ND	ug/kg	20
Trichloroethene	ND	ug/kg	20
Trichlorofluoromethane	ND	ug/kg	20
Toluene	ND	ug/kg	20
Vinyl chloride	ND	ug/kg	20
p-Xylene	ND	ug/kg	20
m-Xylene	ND	ug/kg	20
o-Xylene	ND	ug/kg	20

ND = Not detected at the limit of quantitation

Respectfully Submitted,
 Gulf States Analytical, Inc.
 Reviewed and Approved by:

Kathleen Eaves

Kathleen Eaves
 Project Manager



GIEF STATES ANALYTICAL INC.
 3025 Boardwalk Drive Suite 200
 Ann Arbor, MI 48108

TEL: (734) 961-1111 FAX: (734) 961-3696

ANALYSIS REPORT

GSAI Sample: 13327
 GSAI Group: 2196
 Date Reported: 09/04/90
 Discard Date: 10/04/90
 Date Submitted: 08/20/90
 Date Sampled: 08/17/90
 Collected by: CB
 Project: Fabriccon
 Attn: Ms. Sandra Pelowski
 Matrix: Soil
 Sample ID: 3-0192 SB-17 4.5'-6.5'

ERM, Inc.
 3025 Boardwalk Drive Suite 200
 Ann Arbor, MI 48108

Project No.: 721-03-32-01
 Sales Order: 1784
 Purchase Order:

Test	Analysis	Results	Units	Limit of
		as Received		Quantitation
0111	Moisture	18.0	%	0.1
0144	Antimony by Flame AA	ND	mg/kg	20
0147	Beryllium by Flame AA	ND	mg/kg	0.5
0149	Cadmium by Flame AA	ND	mg/kg	1
0151	Chromium by Flame AA	15	mg/kg	2
0153	Copper by Flame AA	17	mg/kg	5
0155	Lead by Flame AA	ND	mg/kg	10
0159	Mercury by Cold Vapor AA	ND	mg/kg	0.25
0161	Nickel by Flame AA	22	mg/kg	5
0166	Silver by Flame AA	ND	mg/kg	1
0172	Zinc by Flame AA	53	mg/kg	2

GSAI Sample: 13327
 GSAI Group: 2196

ERM, Inc.
 Sample ID: 3-0192 SB-17 4.57-6.57

Test Analysis	Results as Received	Units	Limit of Quantitation
0348 Total Petroleum Hydrocarbons Method: EPA 418.1 MOD	ND	mg/kg	10
0525 Thallium by Flame AA Method: SW-846 7840	ND	mg/kg	50
0969 Methanol Method: SW-846 8000	ND	mg/kg	5,000
145 Arsenic by Furnace AA Method: SW-846 7060	5.7	mg/kg	1.0
164 Selenium by Furnace AA Method: SW-846 7740	ND	mg/kg	0.5
738 Purgeable Aromatic/Halocarbons, GC Method: SW-846 8010/8020	102	ug/kg	20
Bromodichloromethane	ND	ug/kg	20
Bromoform	ND	ug/kg	40
Bromomethane	ND	ug/kg	100
Carbon tetrachloride	ND	ug/kg	20
Chlorobenzene	ND	ug/kg	20
Chloroethane	ND	ug/kg	20
2-Chloroethylvinyl ether	ND	ug/kg	200
Chloroform	ND	ug/kg	20
Chloromethane	ND	ug/kg	100
Dibromochloromethane	ND	ug/kg	20
1,2-Dichlorobenzene	ND	ug/kg	20
1,3-Dichlorobenzene	ND	ug/kg	20
1,4-Dichlorobenzene	ND	ug/kg	20
1,1-Dichloroethane	ND	ug/kg	20
1,2-Dichloroethane	ND	ug/kg	20
1,1-Dichloroethene	ND	ug/kg	20
trans-1,2-Dichloroethene	ND	ug/kg	20
1,2-Dichloropropane	ND	ug/kg	20
cis-1,3-Dichloropropene	ND	ug/kg	20
trans-1,3-Dichloropropene	ND	ug/kg	20
Ethylbenzene	ND	ug/kg	20
Methylene chloride	ND	ug/kg	20

FRM, Inc.

Sample ID: 3-0192 SB-17 4.5'-6.5'

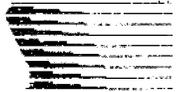
GSAI Sample: 13327
 GSAI Group: 2196

Est	Analysis	Results as Received	Units	Limit of Quantitation
6738	Purgeable Aromatic/Halocarbons, GC			
	Method: SW-846 8010/8020			
	1,1,2-Tetrachloroethane	ND	ug/kg	40
	Tetrachloroethylene	ND	ug/kg	20
	1,1,1-Trichloroethane	ND	ug/kg	20
	1,1,2-Trichloroethane	ND	ug/kg	20
	Trichloroethene	ND	ug/kg	20
	Trichlorofluoromethane	ND	ug/kg	20
	Toluene	ND	ug/kg	20
	Vinyl chloride	ND	ug/kg	20
	p-Xylene	ND	ug/kg	20
	m-Xylene	ND	ug/kg	20
	o-Xylene	ND	ug/kg	20

ND = Not detected at the limit of quantitation

Respectfully Submitted,
 Gulf States Analytical, Inc.
 Reviewed and Approved by:

Kathleen Eaves
 Kathleen Eaves
 Project Manager



GULF STATES ANALYTICAL, INC.
 312 N. BROAD ST. (3RD FLOOR)
 JACKSON, MISSISSIPPI 39201
 PHONE: (601) 372-1111 FAX: (601) 372-6646

ANALYSIS REPORT

GSAI Sample: 13328 GSAI Group: 2196
 Date Reported: 09/04/90 Discard Date: 10/04/90
 Date Submitted: 08/20/90 Date Sampled: 08/17/90
 Collected by: CB
 Purchase Order: Sales Order: 1784
 Project No.: 721-03-32-01
 ERM, Inc. 3025 Boardwalk Drive Suite 200
 Ann Arbor, MI 48108
 Attn: Ms. Sandra Pelowski
 Project: Fabricon
 Matrix: Soil
 Sample ID: 3-0194 SR-11 71-97

Test	Analysis	Results	Units	Limit of
		as Received		Quantitation
111	Moisture	29.9	%	0.1
1144	Antimony by Flame AA	ND	mg/kg	20
1147	Beryllium by Flame AA	ND	mg/kg	0.5
1149	Cadmium by Flame AA	ND	mg/kg	1
0151	Chromium by Flame AA	11	mg/kg	2
0153	Copper by Flame AA	18	mg/kg	5
0155	Lead by Flame AA	11	mg/kg	10
0159	Mercury by Cold Vapor AA	ND	mg/kg	0.25
0161	Nickel by Flame AA	14	mg/kg	5
0166	Silver by Flame AA	ND	mg/kg	1
0172	Zinc by Flame AA	59	mg/kg	2

GSAI Sample: 13328
 GSAI Group: 2196

ERM, Inc.
 Sample ID: 3-0194 SB-11 7'-9'

esc Analysis	Results as Received	Units	Limit of Quantitation
0348 Total Petroleum Hydrocarbons Method: EPA 418.1 MOD	ND	mg/kg	10
0525 Thallium by Flame AA Method: SW-846 7840	ND	mg/kg	50
1145 Arsenic by Furnace AA Method: SW-846 7060	3.5	mg/kg	1.0
1.164 Selenium by Furnace AA Method: SW-846 7740	ND	mg/kg	0.5
738 Purgeable Aromatic/Halocarbons, GC Method: SW-846 8010/8020	ND	ug/kg	20
Benzene	ND	ug/kg	20
Bromodichloromethane	ND	ug/kg	20
Bromoform	ND	ug/kg	40
Bromomethane	ND	ug/kg	100
Carbon tetrachloride	ND	ug/kg	20
Chlorobenzene	ND	ug/kg	20
Chloroethane	ND	ug/kg	20
2-Chloroethylvinyl ether	ND	ug/kg	200
Chloroform	ND	ug/kg	20
Chloromethane	ND	ug/kg	100
Dibromochloromethane	ND	ug/kg	20
1,2-Dichlorobenzene	ND	ug/kg	20
1,3-Dichlorobenzene	ND	ug/kg	20
1,4-Dichlorobenzene	ND	ug/kg	20
1,1-Dichloroethane	ND	ug/kg	20
1,2-Dichloroethane	ND	ug/kg	20
1,1-Dichloroethene	ND	ug/kg	20
trans-1,2-Dichloroethene	ND	ug/kg	20
1,2-Dichloropropane	ND	ug/kg	20
cis-1,3-Dichloropropene	ND	ug/kg	20
trans-1,3-Dichloropropene	ND	ug/kg	20
Ethylbenzene	ND	ug/kg	20
Methylene chloride	ND	ug/kg	20
1,1,2,2-Tetrachloroethane	ND	ug/kg	40
Tetrachloroethylene	ND	ug/kg	20
1,1,1-Trichloroethane	ND	ug/kg	20

GSAI Sample: 13328
 GSAI Group: 2196

ERM, Inc.
 Sample ID: 3-0194 SB-11 7'-9'

Test Analysis	Results as Received	Units	Limit of Quantitation
6738 Purgeable Aromatic/Halocarbons, GC	ND	ug/kg	20
Method: SW-846 8010/8020	ND	ug/kg	20
1,1,2-Trichloroethane	ND	ug/kg	20
Trichloroethene	ND	ug/kg	20
Trichlorofluoromethane	ND	ug/kg	20
Toluene	ND	ug/kg	20
Vinyl chloride	ND	ug/kg	20
p-Xylene	ND	ug/kg	20
m-Xylene	ND	ug/kg	20
o-Xylene	ND	ug/kg	20

ND = Not detected at the limit of quantitation

Respectfully Submitted,
 Gulf States Analytical, Inc.
 Reviewed and Approved by:

Kathleen Eaves

Kathleen Eaves
 Project Manager



GULF STATES ANALYTICAL, INC.

3400 Northwest 10th Street, Ft. Lauderdale, Florida 33309

Phone: (305) 457-1111 FAX: (305) 457-1111

ANALYSIS REPORT

ERM, Inc.
 3025 Boardwalk Drive Suite 200
 Ann Arbor, MI 48108
 Actn: Ms. Sandra Pelowski
 Project: Fabricon
 Matrix: Soil
 Sample ID: 3-0194 SB-13 77-97

GSAI Sample: 13329
 GSAI Group: 2196
 Date Reported: 09/04/90
 Discard Date: 10/04/90
 Date Submitted: 08/20/90
 Date Sampled: 08/17/90
 Collected by: CB
 Purchase Order:
 Sales Order: 1784
 Project No.: 721-03-32-01

Test	Analysis	Results	Units	Limit of
111	Moisture	28.2	%	0.1
144	Antimony by Flame AA	ND	mg/kg	20
147	Beryllium by Flame AA	ND	mg/kg	0.5
149	Cadmium by Flame AA	ND	mg/kg	1
151	Chromium by Flame AA	13	mg/kg	2
153	Copper by Flame AA	13	mg/kg	5
155	Lead by Flame AA	11	mg/kg	10
0159	Mercury by Cold Vapor AA	ND	mg/kg	0.25
0161	Nickel by Flame AA	16	mg/kg	5
0166	Silver by Flame AA	ND	mg/kg	1
1172	Zinc by Flame AA	52	mg/kg	2

Method: EPA 160.3

Method: SW-846 7040

Method: SW-846 7090

Method: SW-846 7130

Method: SW-846 7190

Method: SW-846 7210

Method: SW-846 7420

Method: SW-846 7471

Method: SW-846 7520

Method: SW-846 7760

Method: SW-846 7950

GSAI Sample: 13329
 GSAI Group: 2196

ERM, Inc.
 Sample ID: 3-0194 SB-13 77-9'

Test Analysis	Results as Received	Units	Limit of Quantitation
0348 Total Petroleum Hydrocarbons Method: EPA 418.1 MOD	ND	mg/kg	10
0525 Thallium by Flame AA Method: SW-846 7840	ND	mg/kg	50
1145 Arsenic by Furnace AA Method: SW-846 7060	4.4	mg/kg	1.0
1164 Selenium by Furnace AA Method: SW-846 7740	ND	mg/kg	0.5
5738 Purgeable Aromatic/Halocarbons, GC Method: SW-846 8010/8020	ND	ug/kg	20
Benzenes	ND	ug/kg	20
Bromodichloromethane	ND	ug/kg	20
Bromoform	ND	ug/kg	40
Bromomethane	ND	ug/kg	100
Carbon tetrachloride	ND	ug/kg	20
Chlorobenzene	ND	ug/kg	20
Chloroethane	ND	ug/kg	20
2-Chloroethylvinyl ether	ND	ug/kg	200
Chloroform	ND	ug/kg	20
Chloromethane	ND	ug/kg	100
Dibromochloromethane	ND	ug/kg	20
1,2-Dichlorobenzene	ND	ug/kg	20
1,3-Dichlorobenzene	ND	ug/kg	20
1,4-Dichlorobenzene	ND	ug/kg	20
1,1-Dichloroethane	ND	ug/kg	20
1,2-Dichloroethane	ND	ug/kg	20
1,1-Dichloroethene	ND	ug/kg	20
trans-1,2-Dichloroethene	ND	ug/kg	20
1,2-Dichloropropane	ND	ug/kg	20
cis-1,3-Dichloropropene	ND	ug/kg	20
trans-1,3-Dichloropropene	ND	ug/kg	20
Ethylbenzene	ND	ug/kg	20
Methylene chloride	ND	ug/kg	20
1,1,2,2-Tetrachloroethane	ND	ug/kg	40
Tetrachloroethylene	ND	ug/kg	20
1,1,1-Trichloroethane	ND	ug/kg	20

GSAI Sample: 13329
 GSAI Group: 2196

ERM, Inc.
 Sample ID: 3-0194 SB-13 7'-9'

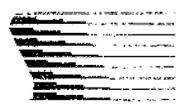
est Analysis	Results as Received	Units	Limit of Quantitation
6738 Purgeable Aromatic/Halocarbons, GC	ND	ug/kg	20
Method: SW-846 8010/8020	ND	ug/kg	20
1,1,2-Trichloroethane	ND	ug/kg	20
Trichloroethene	ND	ug/kg	20
Trichlorofluoromethane	ND	ug/kg	20
Toluene	ND	ug/kg	20
Vinyl chloride	ND	ug/kg	20
p-Xylene	ND	ug/kg	20
m-Xylene	ND	ug/kg	20
o-Xylene	ND	ug/kg	20

ND = Not detected at the limit of quantitation

Respectfully Submitted,
 Gulf States Analytical, Inc.
 Reviewed and Approved by:

Kathleen Eaves

Kathleen Eaves
 Project Manager



GULF STATES ANALYTICAL, INC.
 3450 North Loop East, Suite 112
 Houston, Texas 77058 Telephone: (713) 994-4444 FAX: (713) 994-3636

ANALYSIS REPORT

GSAI Sample: 13330
 GSAI Group: 2196
 Date Reported: 09/04/90
 Discard Date: 10/04/90
 Date Submitted: 08/20/90
 Date Sampled: 08/16/90
 Collected by: CB
 Purchase Order:
 Sales Order: 1784
 Project No.: 721-03-32-01

ERM, Inc.
 3025 Boardwalk Drive Suite 200
 Ann Arbor, MI 48108
 Attn: Ms. Sandra Pelowski
 Project: Fabricon
 Matrix: Soil
 Sample ID: 3-0194 MW-1 4.5'-6.5'

Test	Analysis	Results	Units	Limit of
		as Received		Quantitation
0111	Moisture	14.8	%	0.1
0144	Antimony by Flame AA	ND	mg/kg	20
0147	Beryllium by Flame AA	ND	mg/kg	0.5
0149	Cadmium by Flame AA	ND	mg/kg	1
0151	Chromium by Flame AA	8	mg/kg	2
0153	Copper by Flame AA	7	mg/kg	5
0155	Lead by Flame AA	ND	mg/kg	10
0159	Mercury by Cold Vapor AA	ND	mg/kg	0.25
0161	Nickel by Flame AA	10	mg/kg	5
0166	Silver by Flame AA	ND	mg/kg	1
0172	Zinc by Flame AA	23	mg/kg	2

Method: EPA 160.3
 Method: SW-846 7040
 Method: SW-846 7090
 Method: SW-846 7130
 Method: SW-846 7190
 Method: SW-846 7210
 Method: SW-846 7420
 Method: SW-846 7471
 Method: SW-846 7520
 Method: SW-846 7760
 Method: SW-846 7950

ERM, Inc. Sample ID: 3-0194 MW-1 4.5'-6.5'

GSAI Sample: 13330 GSAI Group: 2196

Page 2

est	Analysis	Results as Received	Units	Limit of Quantitation
0348	Total Petroleum Hydrocarbons Method: EPA 418.1 MOD	ND	mg/kg	10
0525	Thallium by Flame AA Method: SW-846 7840	ND	mg/kg	50
1145	Arsenic by Furnace AA Method: SW-846 7060	3.2	mg/kg	1.0
1164	Selenium by Furnace AA Method: SW-846 7740	ND	mg/kg	0.5
738	Purgeable Aromatic/Halocarbons, GC Method: SW-846 8010/8020	ND	ug/kg	20
	Benzene	ND	ug/kg	20
	Bromodichloromethane	ND	ug/kg	20
	Bromoform	ND	ug/kg	40
	Bromomethane	ND	ug/kg	100
	Carbon tetrachloride	ND	ug/kg	20
	Chlorobenzene	ND	ug/kg	20
	Chloroethane	ND	ug/kg	20
	2-Chloroethylvinyl ether	ND	ug/kg	200
	Chloroform	ND	ug/kg	20
	Chloromethane	ND	ug/kg	100
	Dibromochloromethane	ND	ug/kg	20
	1,2-Dichlorobenzene	ND	ug/kg	20
	1,3-Dichlorobenzene	ND	ug/kg	20
	1,4-Dichlorobenzene	ND	ug/kg	20
	1,1-Dichloroethane	ND	ug/kg	20
	1,2-Dichloroethane	ND	ug/kg	20
	1,1-Dichloroethene	ND	ug/kg	20
	trans-1,2-Dichloroethene	ND	ug/kg	20
	1,2-Dichloropropane	ND	ug/kg	20
	cis-1,3-Dichloropropene	ND	ug/kg	20
	trans-1,3-Dichloropropene	ND	ug/kg	20
	Ethylbenzene	ND	ug/kg	20
	Methylene chloride	ND	ug/kg	20
	1,1,2,2-Tetrachloroethane	ND	ug/kg	40
	1,1,2,2-Tetrachloroethylene	ND	ug/kg	20
	1,1,1-Trichloroethane	ND	ug/kg	20

GSAI Sample: 13330
 GSAI Group: 2196

Sample ID: 3-0194 MW-1 4.5'-6.5'

ERM, Inc.

Test Analysis	Results as Received	Units	Limit of Quantitation
6738 Purgable Aromatic/Halocarbons, GC			
Method: SW-846 8010/8020			
1,1,2-Trichloroethane	ND	ug/kg	20
Trichloroethene	ND	ug/kg	20
Trichlorofluoromethane	ND	ug/kg	20
Toluene	ND	ug/kg	20
Vinyl chloride	ND	ug/kg	20
p-Xylene	ND	ug/kg	20
m-Xylene	ND	ug/kg	20
o-Xylene	ND	ug/kg	20

ND = Not detected at the limit of quantitation

Respectfully Submitted,
 Gulf States Analytical, Inc.
 Reviewed and Approved by:

Kathleen Eaves

Kathleen Eaves
 Project Manager



Traffic Report

1 Project W.O. 721-03-32-01		2 Sample Concentration		<input type="checkbox"/> Low Concentration	3 Ship to:		3-0194	
Project Name/Location		FABRICA		<input type="checkbox"/> Medium Concentration		3 Ship to:		
Project Name/Location		River Rouge		5 Sampling Personnel Contact		GUY STEVE HANLEY		
4 Sample Matrix		Liquid <input type="checkbox"/> Solid <input checked="" type="checkbox"/>		Sampler: C. BART		5450 NW Central Dr. Ste 110		
Other <input type="checkbox"/>		Project Manager: J. Polowski		Houston Tx 77092		Attn: Kathy Evans		
Phone No. (313) 971-0551		6 Shipping Information		Analyses / Method Requested		Volatiles SW 846 8010/8000		
(Name of Carrier) FedEx		(Date Shipped) 8/17/90		(Bill Number) 7372688013		TPH EPA 4181		
Sample Location		SB-11 7-91		Priority Pollutants Metals		TOTAL 3		
Date:		SB-13 7-91						
Time:		MW-1 4.5-6.5						
9 Sample Description		10 Special Handling (e.g. Safety Procedures/Hazardous)						
<input type="checkbox"/> Surface Water		<input checked="" type="checkbox"/> Soil						
<input type="checkbox"/> Ground Water		<input type="checkbox"/> Solid						
<input type="checkbox"/> Leachate		<input type="checkbox"/> Other:		Additional comments: (Specify data package, rush work, special detection limits, etc.)				
<input type="checkbox"/> Sediment								
11 Condition of Samples Received (to be completed by Laboratory Log-in.)								
<input type="checkbox"/> Samples received intact								
<input type="checkbox"/> Samples at 4 degrees (C) 8°								
<input type="checkbox"/> Samples not leaking								
<input checked="" type="checkbox"/> Container numbers match as specified in Item 7								
<input checked="" type="checkbox"/> Container tags match Chain of Custody								
<input type="checkbox"/> Cooler received with Custody Seals intact								
<input checked="" type="checkbox"/> Samples contained within plastic bags								

Log-In Person's Signature
QB (unclear) 8/20/90

Copies: White & Yellow copies accompany sample shipment to laboratory. Yellow copy retained by laboratory. White copy to be returned to ERM for files. Pink copy retained by sampler. Gold copy extra copy as needed.



Traffic Report

1 Project W.O. 7/1-03-30		2 Sample Concentration		<input type="checkbox"/> Low Concentration	Project Name/Location	Far-Brown
3 Ship to: 3-0192		5 Sampling Personnel Contact		<input type="checkbox"/> Medium Concentration	Gully Stas	
4 Sample Matrix		Sampler: P. Root		<input checked="" type="checkbox"/> Liquid	Project Manager: S. Polansky	
<input type="checkbox"/> Other		Phone No. (313) 971-0551		Attn: Kathy Eves-		
6 Shipping Information		7 Specify Type of Analyses, Number of Containers, Approx. Volume		Name of Carrier: FedEx		
(Date Shipped) 8/17/90		Analyses / Method Requested		No. of Bottles: 1		
(Airbill Number) 737268013		Priority Delivery Method		Total Volume		
Sample Location		P.H. EPA 418.1		Valves 846 8010/9020		
SB-15 7-9'		Priced by Miller		1		
SB-16 4.5-6.5'		AlcAds 846 8015		3		
SB-17 4.5-6.5'		Totals		3		
Date: 8/17/90						
Time: 1830						
9 Sample Description		10 Special Handling (e.g. Safety Procedures/Hazardous)				
<input type="checkbox"/> Surface Water	<input checked="" type="checkbox"/> Soil					
<input type="checkbox"/> Ground Water	<input type="checkbox"/> Solid					
<input type="checkbox"/> Leachate	<input type="checkbox"/> Other:	Additional comments: (Specify data package, rush work, special detection limits, etc.)				
<input type="checkbox"/> Sediment						

11 Condition of Samples Received (to be completed by Laboratory Log-in.)		<input checked="" type="checkbox"/> Samples received intact
<input type="checkbox"/> Samples at 4 degrees (C) 80		<input checked="" type="checkbox"/> Samples not leaking
<input type="checkbox"/> Container numbers match as specified in Item 7		<input checked="" type="checkbox"/> Container tags match Chain of Custody
<input type="checkbox"/> Cooler received with Custody Seals intact		<input type="checkbox"/> Samples contained within plastic bags

Log-in Person's Signature: *[Signature]* 8/20/90

Copies: White & Yellow copies accompany sample shipment to laboratory. Yellow copy retained by laboratory. White copy to be returned to ERM for files. Pink copy retained by sampler. Gold copy extra copy as needed.



W.O. No.: 721-03-32-01
 Project Name: FABRICATION

Sampler: C. BOAT

ERM T.R. Number	Date	Time	C O M P	G R A B	Sample Location
-----------------	------	------	---------	---------	-----------------

ERM T.R. Number	Date	Time	C O M P	G R A B	Sample Location	Number of Containers	Volatiles	ORGANICS	Priority	Polystyrene	Modified	Metals	EPA Approved	Method	Remarks
-----------------	------	------	---------	---------	-----------------	----------------------	-----------	----------	----------	-------------	----------	--------	--------------	--------	---------

0194	8/17/90	1045			SB-11 7-9'	1	X	X	X						Keep at 40°C
	8/17/90	940			SB-13 7-9'	1	X	X	X						
	8/18/90	1530			MW-1 4.5-6.5'	1	X	X	X						

Sample Relinquished	Date	Time	Sample Received by:	Date	Time	Reason for Transfer
---------------------	------	------	---------------------	------	------	---------------------

C. Boat	8/17/90	1530	ASB	8/20/90	8:40	
---------	---------	------	-----	---------	------	--

Volatiles EPA SW-846 800/8020
 ORGANICS EPA 418.1 Modified
 Priority Polystyrene Metals EPA Approved Method

Sample Chain of Custody



W.O. No: 221-03-32-01
 Project Name: FABRICON

Sampler: C Boats

ERM T.R. Number	Date	Time	C O M P	G R A B	Sample Location
-----------------	------	------	---------	---------	-----------------

0192	8/17/90	1215			S13-15 7-9'
	8/17/90	1300			S13-16 4.5'-6.5'
	8/17/90	1415			S13-17 4.5'-6.5'

Number of Containers
 Volatile Organics
 EPA SW-846 8010/6000
 TPH EIA 418.1 Modified
 Priority Pollutant
 Alcohols SW 846 8015
 EPA 8160
 Metals

Remarks
 * Keep at 4°C

Sample Relinquished	Date	Time	Sample Received by:	Date	Time	Reason for Transfer
---------------------	------	------	---------------------	------	------	---------------------

Cuts Boats
 8/17/90 1830

AS [Signature]
 8/20/91 8:40

Sample Chain of Custody

COPIES: White & Yellow copies accompany sample shipment to laboratory. Yellow copy retained by laboratory. White copy to be returned to ERM for files. Pink copy retained by sampler. Gold copy extra copy as needed (warehouse).



Sample Chain of Custody

W.O. No.: 721-03-32 Project Name: FABM1com

Sampler: C. BARTZ

ERM T.R. Number	Date	Time	C O M P	G R A B	Sample Location
-----------------	------	------	---------	---------	-----------------

30195	8/20/90	1330	X		HA-1 35'-4.0'
-------	---------	------	---	--	---------------

Number of Containers	Remarks
1	
X	Volatiles Organic
X	EPA SW-846 8010/8020
X	TPH EPA 418.1 Modified
X	Priority Pollutant Metals (EPA Method 9090)

* keep at 4.0°

* 2 week turn away

Sample Relinquished	Date	Time	Sample Received by:	Date	Time	Reason for Transfer
Curtis Bartz	8/21/90	1730				

W. B. Smith 8/22/90 8:25



Traffic Report

1 Project W.O. / 21-03-32		Project Name/Location FABRICON River Rouge	
2 Sample Concentration		Project Matrix <input type="checkbox"/> Liquid <input checked="" type="checkbox"/> Solid <input type="checkbox"/> Other	
3 Ship to: 3-0195		Shipping Information Name of Carrier: FELDEX (Date Shipped) 5/21/90 Parcel Number: 737268791	
4 Sampling Personnel Contact C. Bartz S. Pelowski Attn: KATHY ERVES		8 Sample Location HA-1 35-40 Priority Polystyrene Metals TPH EPA 4181 Modified (EPA Approved Method)	
5 Sample Concentration <input type="checkbox"/> Low Concentration <input type="checkbox"/> Medium Concentration		9 Sample Description <input type="checkbox"/> Surface Water <input checked="" type="checkbox"/> Soil <input type="checkbox"/> Ground Water <input type="checkbox"/> Leachate <input type="checkbox"/> Sediment	
6 Ship to: 3-0195		10 Special Handling (e.g. Safety Procedures/Hazardous) * Two week turn around	
7 Specify Type of Analyses, Number of Containers, Approx. Volume		11 Condition of Samples Received (to be completed by Laboratory Log-In) Samples received intact	
Analyses / Method Requested Volatiles OR Gases 8010/8000 1		Container numbers match as specified in Item 7 <input checked="" type="checkbox"/>	
No. of Bottles 1		Samples at 4 degrees (C) 110 <input checked="" type="checkbox"/>	
Total Volume		Samples not leaking <input checked="" type="checkbox"/>	
Additional comments: (Specify data package, rush work, special detection limits, etc.)		Container tags match Chain of Custody <input checked="" type="checkbox"/>	
Log-In Person's Signature [Signature] 5/22/90		Cooler received with Custody Seals intact <input type="checkbox"/>	
Samples contained within plastic bags <input checked="" type="checkbox"/>		Copies: White & Yellow copies accompany sample shipment to laboratory. Yellow copy retained by laboratory. White copy to be returned to ERM for files. Pink copy retained by sampler. Gold copy extra copy as needed.	

Location and Elevation Survey Scaled Map

APPENDIX C

Phase II Environmental Assessment Report - Section 4
Conclusions and Recommendations - 1 August 1990

APPENDIX D

SECTION 4 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

4.1.1 Asbestos Abatement

Two types of asbestos were found in the materials sampled - Chrysotile and Crocidolite. Of the 42 samples collected, asbestos was detected at greater than 1 % asbestos in 37 samples; 36 samples were determined to contain only Chrysotile and 1 sample was determined to contain both Chrysotile and Crocidolite. The complete asbestos investigation and abatement recommendations are detailed in a separate document entitled "The Asbestos Assessment Survey at the Hagie-Fisher, Inc., Fabricon Division Facilities" dated 25 July 1990.

4.1.2 Geophysical Survey

The EM survey detected two anomalies. The first anomaly located along the eastern edge of the survey area, was linear and trended in a north-south direction. The anomaly is attributed to an underground pipeline. The second EM anomaly indicated the presence of a much larger buried metallic object at the southern end of the survey between survey lines S-150 and S-180. The response of in-phase component when crossing over the anomaly indicated that the object is oriented parallel to and centered on survey line S-165. The anomaly present along survey line S-165 indicates the presence of one UST; a fill pipe observed at the anomaly confirms this presence. The fill pipe was opened and an empty cavity was discovered. No further geophysical investigative techniques are warranted at this time. However, the presence of the UST on site should be addressed. ERM recommends that the UST be properly closed according to current State of Michigan guidelines.

4.1.3 Shallow Soil Investigation

Ground water (perched or an aquifer) was encountered in all eight soil borings at a depth of approximately 8 feet below ground surface. Previous site investigation performed by TEC described their findings in a report entitled "Preliminary Site Characterization" and dated 6 October 1989. In the report, TEC stated that "One boring was completed to a depth of 35 feet to determine the subsurface conditions and to determine the depth of ground water. No ground

water was encountered and the underlying soils consist of at least 35 feet of wet plastic blue clay, overlain by 1 to 12 feet of fill." These findings are not inconsistent with ERM findings assuming that the water encountered is perched. Quality of the water encountered was not determined.

Soil samples submitted to GSAI were analyzed in the laboratory for TPH, Priority Pollutant Inorganics, and VOCs. In addition, four soil samples from borings SB-6, SB-4, SB-5, and SB-3 were submitted to the laboratory and also analyzed for alcohols. Table 3 contains a summary of the laboratory results and laboratory data sheets are included in Appendix C.

No detectable concentrations of TPH were noted in the soil samples submitted from SB-3, SB-6, and SB-8. Low levels of 11 mg/kg and 86 mg/kg of TPH were detected in soil samples SB-4 and SB-7 but these levels are within the acceptable MDR guidelines of 100 mg/kg. Soil boring samples from SB-1, SB-2, SB-5, SB-9 and SB-10 range in TPH from 190 mg/kg to 40,800 mg/kg and exceed the MDR clean-up criteria. Elevated concentrations of TPH (1,970 mg/kg and 40,800 mg/kg) were detected in the soil samples SB-9 and SB-10 which were collected from the surface stained soils near the production building. An elevated TPH concentration of 2,860 mg/kg was also detected in SB-5.

With the exception of trichloroethylene, all VOCs analyzed for were either not detected or detected in concentrations falling below the MDR clean-up criteria. A concentration of 0.5 mg/kg of trichloroethylene was found in the soil at SB-8 taken at a depth of 10 to 12 feet. This concentration of trichloroethylene exceeds the MDR clean-up criteria guideline of 0.06 ppm (mg/kg).

Inorganic soil sample concentrations from SB-1, SB-3, SB-4, and SB-10 did not exceed the average range for soil background concentrations in Michigan. Inorganic concentrations in soil samples collected from SB-2, SB-5, and SB-9 exceeded the average range for soil background concentrations in Michigan for two to seven inorganic compounds (e.g. cadmium chromium, copper, lead, mercury, nickel, and zinc). Inorganic concentrations in soil samples collected from SB-6, SB-7, and SB-8 only slightly exceeded the background concentration for Michigan soils, however, they did not exceed the U.S. background concentrations.

- Closure of UST;
- Excavation of surface stained soil at SB-9 and SB-10; and
- Installation of soil borings and monitoring wells, including sampling and analysis of soil and ground water, as appropriate.

If requested by Eagle-Picher, ERM can provide a proposal and cost estimate for the recommended activities:

ERM also recommends that further soil sampling and analysis be performed to delineate the extent of elevated organic and inorganic compounds detected in the off-site soil samples from SB-2 and SB-5; to characterize the current ground water conditions; and to provide further quantitative input to the remediation associated with each area.

Due to the limited extent of surface soil staining observed during the Phase II assessment (SB-9 and SB-10), ERM recommends that the stained surface soil be excavated and properly disposed of and that the gasoline UST discovered in the southeast corner of the property be properly closed in accordance with State of Michigan guidelines.

4.2 Recommendations

- The gasoline UST located southeast of the facility building (SB-8);
- The soils south of the above ground tank area (SB-2) located along the west property boundary;
- The soils located near the former UST area, west of SB-5.
- The two surface stained soil areas located east of the production building (SB-9 and SB-10).

Based on the limited soil characterization data available from the Phase II Assessment, soil borings located along the western property boundary (SB-1, SB-3, SB-4, SB-6, and SB-7) do not appear to be areas of concern. However, the following suspect areas were identified:

VI. HILLSDALE, MICHIGAN

A. Introduction

Eagle-Picher owns and operates a rubber and automotive parts manufacturing facility (Rubber Plant) in Hillsdale, Michigan (the "site"). The environmental assessment of the site is based on the following:

- A visit to the site by Carol Serlin of ENVIRON on January 16, 1998.
- Interviews with the following facility and corporate personnel: Marlyn Moon, Environmental Manager; AJ Hale, Safety/Environmental Coordinator; and Michael Dixon, Environmental Engineer.
- A review of documents provided to ENVIRON by Eagle-Picher through its legal counsel at the time of the site visit including facility plans, hazardous waste manifests and MSDS, or subsequently delivered, including:
 - Letter to Marlyn Moon from John D. Spearin of MWR, Inc., dated January 13, 1992.
 - Letter to Marlyn Moon from Dawn Brennan of ETG Environmental Inc., dated July 20, 1994.
 - *Site History Document, Hillsdale Tool - Rubber Plant, Hillsdale, Michigan*, prepared by ETG Environmental Inc., dated February 3, 1994.

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Prepared at the Request of Counsel

- Letter to Marlyn Moon from Eric Ehlers of ETG Environmental Inc., dated June 7, 1995.

- *Work Plan Voluntary Investigative and Remedial Actions Hillsdale Tool Division Rubber Products and Daisy II Facilities Hillsdale Michigan*, prepared by Dames & Moore, dated August 14, 1996.

- *Findings of the Voluntary Investigative and Remedial Actions Hillsdale Tool Division Rubber Products and Daisy II Facilities Hillsdale Michigan*, prepared by Dames & Moore, dated March 14, 1997.

- Letter to Marlyn Moon from Rick Rose of the Hillsdale Board of Public Utilities, dated April 6, 1997.

- Letter to Marlyn Moon from John Speilberg of MDEQ, dated June 23, 1997.

- Letter to Mr. John Speilberg from Daniel Price of Dames & Moore, dated July 7, 1997.

- Letter to Marlyn Moon from John Speilberg of MDEQ, dated July 28, 1997.

- Letter to Marlyn Moon from Daniel Price of Dames & Moore, dated September 5, 1997.

- Letter from John Speilberg to Kenneth Kline, dated September 29, 1997.

- A review of federal and state environmental regulatory agency databases for the facility, provided by Environmental Data Resources, Inc. (EDR) on January 14, 1998.

- A review of USGS 7.5 minute topographic map for Hillsdale, Michigan, dated 1959.
- A review of historical aerial photographs (dated 1938, 1955, 1969, 1978, 1983, and 1992).

Sanborn Fire Insurance Maps were requested through EDR, who certified that such maps were not available for the site.

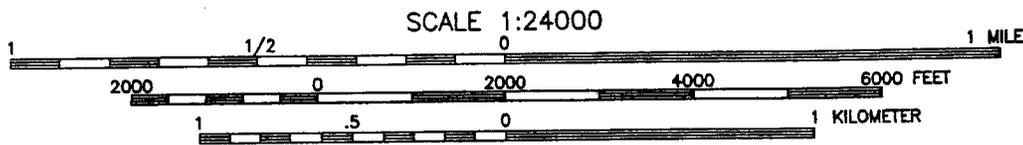
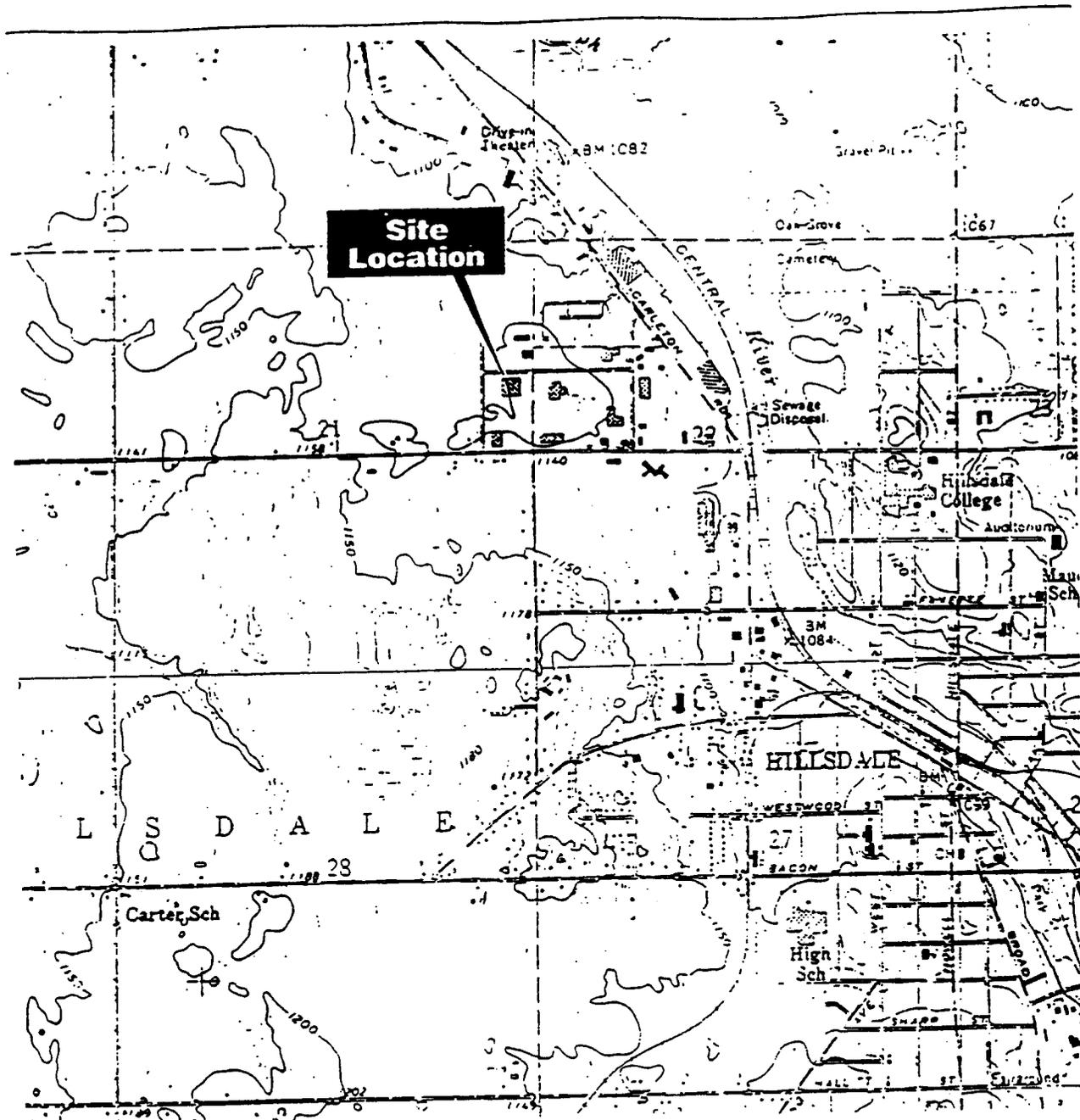
B. Site Setting

The site is located at 215 Industrial Drive in Hillsdale, Michigan (Figure VI-1). Eagle-Picher owns the approximate one acre property which is occupied by a one story office and manufacturing building (approximately 19,000 square feet), storm water drainage area, and associated gravel and asphalt-paved parking areas (Figure VI-2).

The site is located in an industrial area. The site is bordered by Industrial Drive to the north, the Eagle-Picher Daisy II plant to the east, Essex Specialty Products (an adhesive manufacturer) to the south, and Recreation Creations (play-yard equipment) to the west. A warehouse, currently used by Bose, lies across Industrial Drive. The nearest residence is located approximately 300 yards west of the facility.

Although the detection of noise and odors is dependent on weather conditions and ongoing operations at the time of the site visit, ENVIRON did not note strong odors or excessive noise emanating from the facility. According to facility personnel, no complaints have been received from neighboring facilities or residents regarding noise or odors emanating from the facility. In addition, the facility has reportedly received no correspondence from regulatory agencies regarding noise or odors.

Based on the USGS topographic map for Hillsdale, Michigan, ground elevation at the site is approximately 1,150 feet above mean sea level. The surrounding topography appears to slope northeast toward the Saint Joseph River, the nearest body of surface water, located approximately three-quarters of a mile northeast of the facility. Mr. Moon did not recall any flooding at the site since the building was constructed in 1974.



CONTOUR INTERVAL 40 FEET
 DOTTED LINES REPRESENT 10-FOOT CONTOURS
 NATIONAL GEODETIC VERTICAL DATUM OF 1929



SOURCE: U.S.G.S. 7.5 minute series (topographic)
 Hillsdale Quadrangle, Michigan 1985 Provisional Edition

ENVIRON

Vicinity Map
 Eagle-Picher
 Hillsdale, Michigan

Figure VI-1

Drafter: J Sahagun

Date: 1/27/98

Contract Number: 02-6589A

Approved:

Revised:

FILE: 026589A\6589A\FIC



NOT TO SCALE

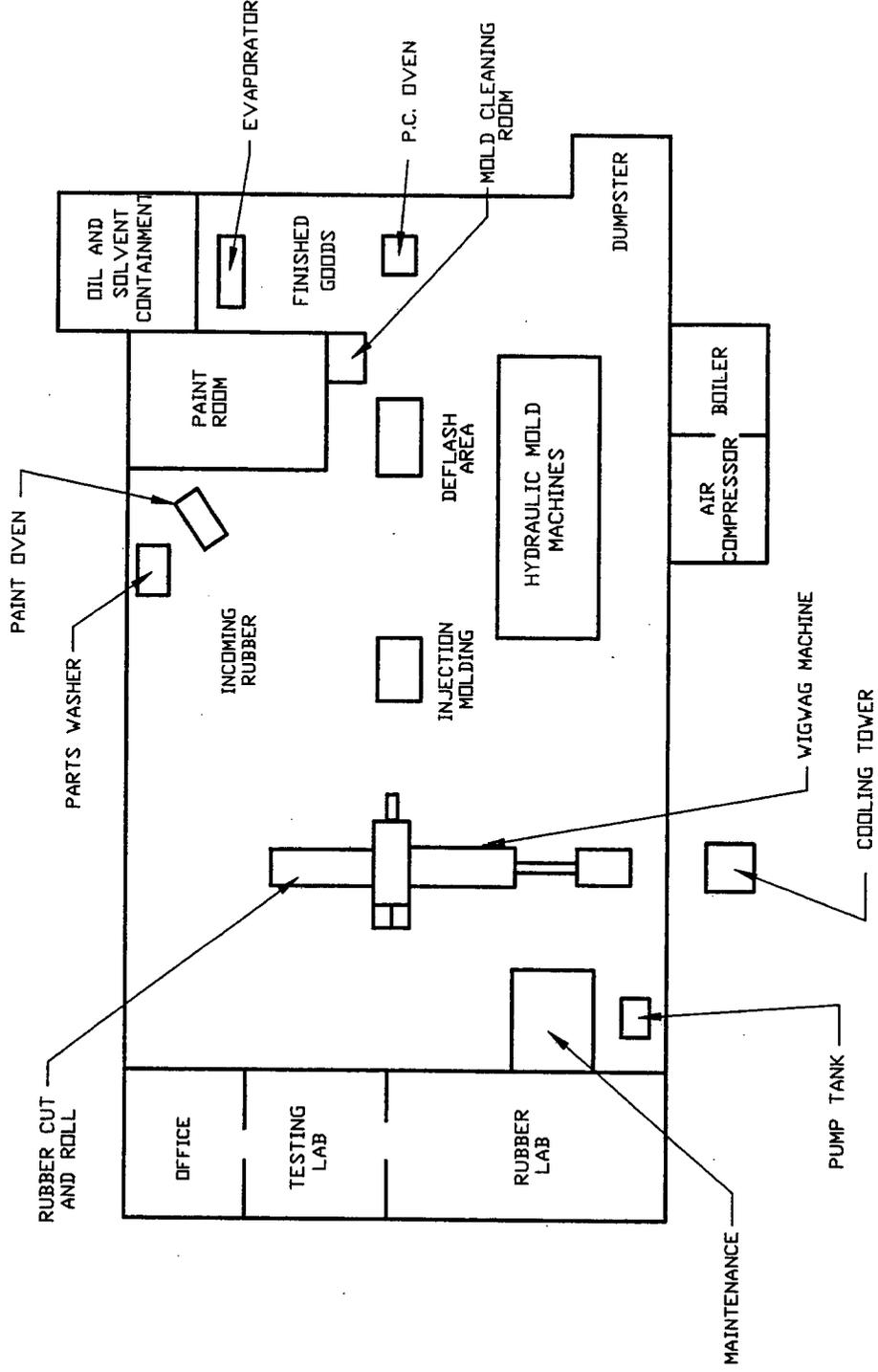


Figure VI-2

Site Plan

Bagle Ficher Rubber Plant
Hillsdale, Michigan

Approved: _____ Revised: _____
Contract Number: 02-6583A Date: 1/28/98
Drafter: J Sahagun

ENVIRON

According to Mr. Moon, drinking water at the site is supplied by the City of Hillsdale. Ground water monitoring wells are located on site. Mr. Moon reported that the depth to shallowest ground water was approximately 45 to 50 feet below ground surface. The shallow ground water flows northeast toward the Saint Joseph River. According to a report prepared by ASI (dated June 5, 1992), the nearest drinking water well (Charles Conklin domestic well) is located approximately one-quarter mile south of the site. In addition, two domestic supply wells are located approximately one mile west of the site.

Sewage treatment services are provided by the City of Hillsdale. According to Mr. Moon, the facility has never used septic systems. Electrical service is provided by the Hillsdale Board of Public Utilities. Natural gas service is provided by Michigan Gas Utilities.

C. Site History

Mr. Moon was familiar with the historical use of the site, and stated that he was working for Eagle-Picher when the Rubber Plant was constructed in approximately 1974. The facility was constructed on farmland. Historical aerial photographs (dated 1938, 1955, 1969, 1978, 1983, and 1992) and topographic maps (1959) of the site vicinity were reviewed by ENVIRON. A review of the aerial photographs, topographic maps, and reports provided to ENVIRON by Eagle-Picher indicates the following regarding site history:

- The 1938 and 1955 aerial photographs indicate that the property is occupied by an airport. Land use surrounding the airport is agricultural. The 1959 topographic map identifies the airport as the Hillsdale Airport. ETG's review of aerial photographs (report dated July 20, 1994) indicated that the airport appears to have been decommissioned between 1955 and 1963. ETG observed landfilling activity in an area southwest of the site in the 1955 aerial photograph.
- The 1969 aerial photograph indicates that the airport has been decommissioned. Industrial Drive can be identified in the former airport area. The Rubber Plant is not present, however the area east of the Rubber Plant has been developed. The area northeast of the site is occupied by a trailer park.

- Increasing industrial development is depicted in the 1978 and 1983 aerial photographs. The building is depicted in its current configuration in the 1992 aerial photograph.

D. Description of Operations

The Rubber Plant manufactures rubber and rubber/metal parts for the automotive industry. Mr. Moon stated that the facility makes approximately 115 different parts. Operations consist of rubber mixing, cutting, molding, and deflashing. Production of some parts also requires adhesive application. Metals parts coming into the facility are cleaned and then joined to the rubber. Rubber development is conducted within a small test laboratory. According to Mr. Moon, the facility owns two forklifts (one propane, one electric), and one pick-up truck; vehicle maintenance is not conducted at the site.

Eagle-Picher employs approximately 35 people at the Rubber Plant, who work three 8-hour shifts. The facility operates six days per week. The facility's Standard Industrial Code (SIC) is 3069 (fabricated rubber products, not elsewhere classified).

The major manufacturing operations conducted at the facility consist primarily of the following:

- Receiving and Shipping - Raw materials are received and off-loaded at the truck loading docks. Raw materials are segregated (rubber, curing agents, and other chemicals) and stored at various locations throughout the facility pending use. Finished goods are stored on shelves in the northeastern portion of the building pending shipment.
- Rubber Mixing and Cutting - Different types of rubber and curing agents are mixed together using a mill equipped with rollers. The rubber is heated during the milling process which makes it malleable and enhances the mixing. Curing agents are sprinkled directly on the rubber. Mixed rubber is pre-cut and cooled using a wig-wag machine. Cooled rubber is then cut into pieces of specified length in preparation for molding.

- Rubber Molding - The facility uses six hydraulic presses and one injection molding machine to mold the rubber. The hydraulic presses compress and heat the rubber to make various size rubber strips. In the injection molding machine, strips of rubber are heated and injected between metal rings. Some molded rubber parts required further curing and are heated in an oven at a specified temperature and length of time prior to cooling. Molded rubber is cooled on racks, then rough edges are removed by trimming or deflashing the strips. Used molds are periodically cleaned in the mold room using a blasting machine (blasting is conducted using pelletized material).

- Rubber Painting (Adhesive Application) - Parts requiring adhesive application are washed in a parts washer and dried. Then adhesive is applied using two dry-filter spray booths. Adhesive is manually loaded and unloaded in the booths. Rubber and associated metal parts are placed in the booth, sprayed, and dried. Periodically, small quantities of toluene are used to clean the spray nozzles.

- Rubber Research and Development - Bench scale rubber development and testing are conducted in the rubber laboratory. The laboratory contains a mini-mill, two mini-presses, three ovens, and several rubber process analyzers. The lab develops new formulations of rubber to meet customer requirements, and analyzes the performance properties of parts produced at the facility as well as other Eagle-Picher facilities.

The primary raw materials used and approximate annual usage quantities include: pre-mixed rubber (1,200,000 pounds per year); powdered or granular curing agents, including stearic acid, sulfur, methyl cumate, altox, and zinc oxide; various hydraulic and machine oils (maximum of four 55-gallon drums at a time); adhesives, containing xylenes, trichloroethene, methyl ethyl ketone and methyl isobutyl ketone (700 gallons per year); toluene (200 gallons per year); aqueous parts washing fluid, containing primarily sodium phosphate (500 gallons per year); steel shot for molding cleaning (600 pounds) and boiler treatment chemicals containing caustic chemicals (maximum of three 55-gallon drums at a time).

E. Database Review

ENVIRON reviewed the results of the environmental database searches provided by EDR. The subject site is listed on one database searched as follows:

- The facility is listed in the RCRIS database as a small quantity generator of hazardous waste. Issues associated with the facility's hazardous waste generation are discussed in Section G of this chapter.

In addition to the subject site being listed, several off-site properties were listed on various regulatory databases as discussed below:

- Two sites within one-quarter mile of the facility are listed in the RCRIS database as large quantity generators of hazardous waste. In addition, one site within one-quarter mile of the facility is listed in the RCRIS database as a small quantity generator of hazardous waste. The presence of hazardous waste generators in the vicinity of the subject site does not necessarily represent an environmental concern.
- Two sites within one-quarter mile of the Rubber Plant are listed on Michigan's UST database as having registered underground storage tanks (USTs). One of these sites is listed in the LUST database and is discussed below. The presence of USTs at the remaining site in the vicinity of the subject site does not necessarily represent an environmental concern.
- Two sites within one-half mile of the subject property have reported leaking underground storage tanks (LUSTs). One of these sites is the Eagle-Picher Daisy II facility, located adjacent to, and immediately downgradient of, the Rubber Plant. The second site, Hillsdale County Medical Care, located approximately one-half mile southeast of the facility, is listed as closed. This site likely does not represent an environmental concern.

F. Chemical and Chemical Waste Storage

1. Underground Storage Tanks

Facility personnel reported that there are no known existing USTs located at the site. No registered USTs are reported to exist at the site according to the EDR data base report.

2. Aboveground Storage Tanks

One aboveground storage tank is located inside the facility adjacent to the evaporator. The 1,000-gallon polyethylene tank is used to store non-hazardous wastewater pending evaporation. The tank is located on concrete and secondary containment is provided.

3. Drums and Other Storage Areas

The main drum storage area is located at the east end of the building. The storage area is bermed, gated, and locked. Drums are stored both on racks and on the epoxy-coated concrete floor. Within the area, drums and other containers are segregated by chemical type. During the site visit, ENVIRON noted one drum of toluene, several totes containing Polar parts-washing fluid, one drum of gear lubricant, one drum of propylene glycol, five drums of hydraulic oil, and several 5-gallon containers of adhesive. In addition, two drums of hazardous waste (one drum of waste toluene and one drum of waste paint filters) were segregated and stored in the northeastern corner of the storage area. According to facility personnel no significant leaks or spills associated with this storage area have been reported. ENVIRON noted no evidence of spillage.

The Rubber Plant stores boiler water treatment chemicals in 55-gallon drums within the boiler room. At the time of ENVIRON's visit, three drums of boiler water treatment chemicals were present in the boiler room. The drums were stored in the corner of the room, directly on the concrete floor. No evidence of spillage was noted.

Curing agents used in the rubber mixing process are stored in small bins, located on a table adjacent to the rubber milling machine. During ENVIRON's visit, good house-keeping was observed, and no evidence of spillage was noted.

Three 55-gallon drums containing mold release chemicals were observed outside the air compressor room behind the hydraulic mold machines. The drums are hooked up to tubing attached to the mold release guns and mold release liquid is transported to the guns on demand. No evidence of spillage was noted during ENVIRON's site visit.

Drum storage is not conducted outside the building.

4. Spill Prevention Control and Countermeasures (SPCC) Plan

Facilities with the capacity to store oil or petroleum products in a single aboveground tank larger than 660 gallons, in aboveground tanks or containers with a combined volume exceeding 1,320 gallons (i.e., the equivalent of twenty-four 55-gallon drums), or in underground tanks with a combined volume exceeding 42,000 gallons are required to prepare a SPCC plan, as specified under the Code of Federal Regulations (40 CFR 112.3), if a release from the facility could be reasonably expected to discharge oils to navigable waters. The facility maintains a SPCC plan (updated in 1996), and appears to be in compliance with the plan.

G. Hazardous and Nonhazardous Waste

1. Hazardous Waste

According to facility personnel, the Rubber Plant is a small quantity generator (SQG; generates less than 1,000 kilograms of hazardous waste in a calendar month). The facility's Hazardous Waste Generator Identification Number is 0000809798.

ENVIRON reviewed waste manifests for the period from 1995 through 1997. During this period, hazardous waste taken off-site included waste toluene, trichloroethene, and waste paint filters. In 1997 (through September), the facility disposed of approximately 315 gallons of hazardous waste. In 1996, the facility disposed of 220 gallons and 3,600 pounds of hazardous waste; in 1995, the facility disposed of 1,485 gallons of hazardous waste. As stated previously, during the site visit, ENVIRON observed one 55-gallon drum of waste toluene and one 55-gallon drum of waste paint filters in the main storage area.

As a SQG, the facility is required under the Resource Conservation and Recovery Act (RCRA), as amended, to meet several regulatory requirements (40 CFR Part 262), including: (1) obtain a USEPA generator identification number; (2) not store waste on-site for more than 180 days, provided the quantity of waste stored on site never exceeds 6,000 kilograms; (3) prepare and use the UHWM, maintaining copies on site for at least three years; (4) properly package, label, and placard wastes including labeling wastes with the date accumulation begins; (5) establish programs such as preparedness and prevention, emergency procedures, and personnel training; and (6) manage wastes at RCRA-permitted facilities. The facility appears to be in substantial compliance with applicable SQG hazardous waste management requirements.

2. Nonhazardous Waste

Nonhazardous waste currently generated by the facility includes production waste (evaporator residue, cardboard with rubber, rubber scrap) and general office trash. White paper and cardboard are recycled off site. The remaining nonhazardous waste is collected by Laidlaw on a weekly basis, and taken to the Williams County Landfill for disposal.

3. Off-Site Liabilities

The facility uses several off-site waste disposal facilities for its hazardous waste. Eagle-Picher selects waste disposal facilities through a corporate program which evaluates the general history and financial strength of each disposal facility. Facilities that do not meet Eagle-Picher's financial requirements cannot be used by individual Eagle-Picher facilities.

ENVIRON searched the Comprehensive Environmental Response, compensation, and Liability Information system (CERCLIS) database and the State Priority Lists (SPL) to determine whether any of the off-site waste management facilities used by the Rubber Plant are listed. The database search included the following sites:

- (1) Heat Energy Advance Technology, Dallas, Texas
- (2) Detrex, Detroit, Michigan

- (3) Petro-Chem, Detroit, Michigan
- (4) Safety-Kleen, Dolton, Illinois
- (5) Safety-Kleen, New Castle, Kentucky

None of the sites are listed on the SPL or the National Priorities List (NPL). All of the sites are listed on CERCLIS. With the exception of the Safety-Kleen New Castle site, all other sites are assigned a "No Further Remedial Action Planned" (NFRAP) classification, and therefore do not likely represent a significant concern to Eagle-Picher. Similarly, the Safety-Kleen New Castle site, while not listed as NFRAP, has had no history of investigation or assessment since 1984, and likely does not represent a significant concern to Eagle-Picher. Two of the sites (Dolton, Illinois and Detroit, Michigan) are also listed on the state-equivalent CERCLIS list (SHWS database). No information regarding the Dolton site was available. The Detrex site is listed as being on the Michigan Act 307 site list, with a release of TCE.

If, in the future, any of the off-site waste management facilities used by the site, both listed previously and otherwise, becomes a federal or state Superfund site, subject to federal or state enforcement proceedings, or the subject of third party lawsuits, Eagle-Picher could be responsible for a portion of the investigation or remediation costs.

H. Air Emissions

The primary air emissions at the facility are volatile organic compounds (VOCs) from the dry filter spray booths, parts washer, evaporator and ovens; nitrogen oxides (NOx) and carbon monoxide (CO) from two sweet natural gas-fired boilers (800,000 btu/hour); and particulates from the blasting operation in the mold cleaning room.

Facility personnel indicated that all equipment is exempt from Michigan permitting requirements. ENVIRON's review of Michigan requirements indicates that the boilers and oven are exempt under Rule 282; the two dry filter spray booths are exempt under Rule 287; the parts washer and evaporator are exempt under Rule 290; and the mold cleaning room is exempt under Rule 281.

USEPA has established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: ozone, nitrogen dioxide, sulfur oxides, carbon monoxide, particulate matter, and lead. States are required to meet these standards by regulating emissions of the criteria pollutants or, in the case of ozone, their reactive precursors (i.e., VOCs and nitrogen oxides). Regions that do not meet the NAAQS are designated as nonattainment areas. Under Title I of the 1990 Clean Air Act Amendments (CAAA), major sources of criteria pollutants in nonattainment areas are subject to Reasonably Available Control Technology (RACT) requirements. The site is located in an attainment area; thus the applicable major source threshold is 100 tons per year for VOCs or nitrogen oxides. Given the fact that the boilers and blasting equipment in the mold cleaning room at the facility are exempt from permitting requirements, it is unlikely that emissions exceed this threshold value. Therefore, the facility does not appear to be subject to any RACT requirements.

Under Title III of the CAAA, facilities that are included in any of the 166 major source categories and that emit Hazardous Air Pollutants (HAPs) in quantities exceeding threshold quantities are required to implement Maximum Achievable Control Technology (MACT). According to Mr. Moon, the facility does not emit HAPs in quantities exceeding threshold quantities; therefore, the facility does not appear to be subject to Title III of the CAAA.

Because the facility is not classified as a major source under either Title I or Title III of the CAAA, it is not subject to federal air permitting requirements under Title V of the CAAA.

I. Wastewater Discharges

The facility's wastewater discharges are sanitary wastewater and storm water. According to Mr. Moon, the facility does not discharge process wastewater. All process wastewater including that produced from parts washing, cooling tower and boiler blowdown, the laboratory sink, wig-wag and milling water, and mop water, is evaporated in the evaporator (located in the northeast portion of the building). Sanitary wastewater is discharged directly to the local POTW.

On November 16, 1990, USEPA issued regulations establishing National Pollutant Discharge Elimination System (NPDES) permit application requirements for storm water discharges associated with industrial activity. For rubber production facilities with Eagle-

Picher's SIC code (3069), a permit is required for storm water discharges associated with industrial activity (i.e., storm water exposed to material handling equipment or activities, raw materials, intermediate products, final products, waste material, by-products, or industrial machinery that are exposed to storm water) that either discharge directly to waters of the United States, through a municipal separate storm sewer to waters of the United States, or through a privately-owned conveyance to waters of the United States.

Storm water runoff from the facility flows northeast to the storm water drain field, where it discharges to the local storm water collection system or infiltrates into the ground. The facility has a general storm water discharge permit (Michigan Certificate of Coverage No. MIR11J007) which it shares with the neighboring Eagle-Picher Daisy II plant. The facility's storm water pollution prevention plan (SWPPP, dated May 28, 1996) has been implemented. Based on information provided by facility personnel, the facility appears to be in substantial compliance with its storm water permit requirements.

J. On-Site Soil and Ground Water Contamination

Soil and ground water contamination is present at the facility as a result of releases and/or spills occurring during the facility's operating history. According to Mr. Moon, contaminated soil at the site has been remediated to the extent practicable using soil vapor extraction (SVE), and further soil remediation is not anticipated. The extent of ground water contamination in the site vicinity has not been completely evaluated, and ground water contamination emanating from the facility extends northeast off-site and across Uran Road. The facility has submitted an Interim Remedial Action Plan to initiate remediation of ground water using horizontal wells. MDEQ has authorized the facility to proceed with the interim remedial measures, but has indicated that further site assessment will be necessary, as well as the preparation of a formal Remedial Action Plan (RAP). A summary of the investigation and remediation of soil and ground water underlying the site is presented below.

- The occurrence of VOCs in soil was first identified in 1985. Contamination was apparently caused by a release of trichloroethene (TCE) on the north side of the facility, near the truck loading docks. According to a document prepared by Dames

& Moore (dated August 1996), TCE utilized in a degreasing bath drained through an overflow pipe into an uncovered 55-gallon drum, located near the truck loading dock, where it overflowed into the unpaved parking area. The exact quantity of TCE loss was not known.

- A Phase I soil investigation was conducted in August 1985 and consisted of drilling and sampling six soil borings (SB-1 through SB-6) to approximately 10 feet below ground surface. VOCs, primarily TCE, were detected in the soil. Detected TCE concentrations ranged from 40 ug/kg to 14,000 ug/kg.
- A Phase II investigation was conducted in late 1985. The investigation consisted of a soil gas survey in the known release area near the truck loading dock; drilling and sampling of six soil borings (SB-7 through SB-12); and drilling and installation of three monitoring wells (MW-1 through MW-3).

TCE was detected in soil gas samples; however, TCE was also detected in ambient air which complicated the interpretation of the soil gas results. Soil sampling results from SB-10 and SB-11 indicated detected TCE concentrations ranging from 810 ug/kg to 23,000 ug/kg. Initial ground water analytical results confirmed the presence of TCE in ground water; the highest TCE concentration (240 ug/l) was detected in well MW-1.

- Four additional soil borings (B-1 through B-4) were drilled and sampled in the vicinity of the truck loading dock in April 1986 to maximum depths of 23 feet below ground surface. TCE was detected in the majority of soil samples analyzed at concentrations ranging from 1,300 ug/kg to 41,700 ug/kg.
- The facility proposed to use soil vapor extraction (SVE) to clean up the site, and use of SVE was approved by MDEQ in May 1986. The SVE remediation system was installed in June 1986, and consisted of one nested extraction well, and seven nested air injection wells. The system began operating in September 1996. The SVE

system addressed the removal of VOCs from three soil zones: the Upper Drift (ground surface to 12 feet); the Lower Drift (12 feet to 19 feet); and the Bedrock (19 feet to 30 feet).

A soil boring (EPSB-1) was drilled to assess system performance in February 1988; results indicated that TCE concentrations in the Upper Drift had been reduced by more than 90 percent. Eight bedrock vent wells were added to the SVE system in June 1988 to enhance VOC recovery from the Bedrock zone. The SVE system ceased to perform in August 1991 due to blower failure. The equipment was replaced, and the SVE system was restarted in January 1992.

Interim soil borings were drilled and sampled in August 1993. Three soil borings were drilled and sampled in the vicinity of the SVE system to maximum depths of 32 feet below ground surface. Results indicated that TCE concentrations in the vicinity of the SVE system had been reduced significantly. The maximum detected TCE concentration within the Upper and Lower Drift zones was 180 ug/kg. The maximum detected TCE concentration in the Bedrock zone was 6,800 ug/kg.

Routine SVE system monitoring results indicated that the SVE system had removed approximately 25 pounds of 1,1,1-TCA and 1,229 pounds of TCE from subsurface soils during the period between January 1992 and May 1995. By 1995, the TCE removal rate had dropped to an average of approximately 5 pounds per month.

- Monitoring wells were sampled in 1986, 1987, 1990, and 1993. The highest TCE concentrations were detected in wells MW-1 and MW-2 in 1987 at 348 ug/l and 68 ug/l, respectively. The highest TCE concentration detected in well MW-3 (80 ug/l) occurred in 1986. In addition, PCE (maximum concentration of 3 ug/l) and 1,1,1-TCA (maximum concentration of 42 ug/l) were detected in the wells during some of the sampling events. By 1993, TCE concentrations observed in all three wells had decreased by at least 75 percent.

- Wells MW-1 through MW-3 were redrilled in late 1994. Previous testing had indicated that the wells were improperly constructed and screened in both drift and bedrock. Therefore, the wells were redrilled and recompleted. Two aquifer zones were identified at the site; one shallow, unconfined zone, and a deeper bedrock sandstone zone. The two zones are separated by an approximate 20 to 30 foot thick shale layer. Two wells were installed at each of the previous well locations; one above the shale (Shallow zone), and one below the shale layer (in the Deep zone). Wells MW-4 through MW-6 were drilled and installed during the same time period. Wells MW-7 through MW-11 were drilled and installed in mid-to-late 1995.

Packer testing of the intervening shale layer was conducted. Packer test results apparently indicated that the shale layer was fractured.

Ground water sampling results indicated the occurrence of TCE in both the Shallow and Deep zones. Dames & Moore (report dated August 1996) suggested that detected contamination in the Deep zone was caused by original wells MW-1 through MW-3 which were screened across both water-bearing zones.

- Ground water sampling conducted in April 1996 detected TCE in both the Shallow and Deep zones. Detected TCE concentrations in the Shallow zone ranged from 1.7 ug/l to 647 ug/l. TCE was detected in the furthest downgradient well, MW-8S, at a concentration of 370 ug/l. Detected TCE concentrations in the Deep zone ranged from 1.6 ug/l to 20.2 ug/l.
- Further investigation was conducted in late 1996 and early 1997. The investigation consisted of drilling and sampling eleven soil borings (five of which were inside the building) in the vicinity of the SVE system; drilling and installing a Shallow zone extraction well (well EW-1) near existing well MW-8S, and two off-site Shallow zone monitoring wells (MW-12 and MW-13); and ground water sampling. In addition two aquifer tests were conducted at Well EW-1, and falling head slug tests were conducted in four Shallow zone wells (MW-8S, MW-9S, MW-11S, and MW-13S). Ground water modeling of the contaminant plume was conducted.

Analytical results from the eleven soil borings confirmed the continued presence of TCE in the subsurface at concentrations greater than the established action level (100 ug/kg). The maximum detected TCE concentration was 1,800 ug/kg. TCE detections greater than the action level were generally confined to soil underlying the building. Based on these results, Dame & Moore concluded that *"the area of remaining impact is located beneath the Rubber Products building, and that soil beneath the area of the original release outside of the building has been sufficiently remediated."*

Data produced during aquifer and slug testing were used to estimate aquifer hydraulic conductivity. Estimated hydraulic conductivities for the Shallow zone ranged from 1.4 feet per day to 7.5 feet per day. The sustained yield of the pumping well was less than 1 gallon per minute.

Ground water analytical results confirmed the presence of TCE in off-site Shallow zone wells MW-12 and MW-13. Detected TCE concentrations in the two wells were 200 ug/l and 18 ug/l, respectively. The Shallow zone plume extended northeast of the facility, crossed Uran Drive, and extended northeast beyond Uran Drive.

Maximum TCE detections in the Deep zone were at well MW-1D (18.3 ug/l) and well MW-3D (8.2 ug/l). Based on these and previous ground water sampling data Dames & Moore concluded that *"TCE concentrations in the deep groundwater zone are slowly declining. . . this appears to confirm the diminishing impact due to the cross contamination of the deep zone."* A report describing the investigations was submitted to MDEQ along with recommendations to discontinue operating the SVE system, and initiate remedial plans for the Shallow Zone.

- The MDEQ responded to these recommendations on June 23, 1997. The MDEQ agreed that only further ground water monitoring was required in the Deep zone. In addition, the MDEQ stated that additional off-site wells were needed to identify the downgradient extent of the ground water plume in the Shallow zone. The MDEQ also stated that the extent of soil contamination from the original TCE release had not

been completely delineated, and additional soil borings were necessary to complete the delineation. The MDEQ suggested that the facility assess potential indoor air impacts associated with termination of SVE activity prior to ceasing extraction. The MDEQ stated that a Remedial Action Plan (RAP) was required to address all remaining impacts at the site, including residual soil contamination remaining under the building. The MDEQ indicated that one option to address residual soil contamination was to enter into a Restrictive Covenant for the property.

Furthermore, the MDEQ stated that the RAP *"will need to be reviewed by district and management Quality Review Teams. This will then need to be approved by MDEQ and implemented in accordance with an approved schedule. Once the remedial actions are completed according to the approved RAP, the Site will be delisted from the Michigan Sites of Environmental Contamination list."*

- On July 7, 1997, Eagle-Picher proposed interim remedial action at the site. The facility proposed to decommission the SVE system and place a Restrictive Covenant on the area of remaining impacted soil beneath the building under a Restricted Industrial Closure. Mr. Moon recalled that the SVE system was shut down during the same time period.
- The facility proposed to install a horizontal well (with a screen length of 700 feet) along the axis of the Shallow zone ground water plume, and to remove contaminated ground water from the area via this well. Ground water extracted from the remedial system would be discharged directly to the City of Hillsdale Publicly Owned Treatment Works (POTW), without pre-treatment. According to Dames & Moore, the POTW had granted Eagle-Picher permission to discharge up to 14,000 gallons per day of untreated ground water (letter dated April 6, 1997).
- The MDEQ granted Eagle-Picher permission to proceed with installation and operation of the horizontal well on July 28, 1997. However, the MDEQ required preparation of an Interim RAP for the activity.

- A September 5, 1997 letter from Dames & Moore to Eagle-Picher further describes the planned interim remedial action system. Dames & Moore proposes to install two horizontal wells. One well (HRW-1) will have a screen length of approximately 250 feet, and will extend from the Rubber Plant to the southwestern corner of the western half of the Eagle-Picher Daisy II facility. The second well (HRW-2), with an approximate 500-foot screen length, will extend from the Rubber Plant to approximately 350 feet north of well MW-13. Installation of well HRW-2 will require access to private property owned by the Kline Group. Extracted ground water will be discharged directly to the POTW, at a sewer located near the corner of Industrial Drive and Uran Street. Dames & Moore proposes to check the system monthly, and to sample Shallow zone monitoring wells and extraction well discharge quarterly.
- Dames & Moore estimates the cost for horizontal well installation, and 5 years of system operation, at approximately \$850,000. This estimate does not include costs for installation of additional monitoring wells and soil borings, and the preparation of a formal RAP as required by the MDEQ in its letter dated June 23, 1997. Quoted costs also assume that site access will be readily granted, and work will proceed without difficulty. In addition, costs for operation of the system beyond 5 years are not included. Costs for a final remedy have not been estimated. According to Mr. Moon, Eagle-Picher is assuming that the interim remedial action will ultimately result in the final remedy.

ENVIRON's experience with horizontal wells indicates that difficulties likely will be encountered in the field. To account for uncertainties associated with site access, well installation and operation, and the necessary length of remediation, ENVIRON believes that a more reasonable cost could be on the order of \$1,500,000. In addition, ENVIRON estimates the cost for installation of additional monitoring wells and soil borings, and preparation of formal documents required by MDEQ, to be on the order of \$100,000. Therefore, the cost to

complete investigation and remediation at the site could be on the order of \$1,600,000 or more, depending upon final requirements imposed by MDEQ.

K. Asbestos and Polychlorinated Biphenyls

Use of asbestos in building materials was phased out in 1977, although most buildings constructed prior to 1984 used asbestos materials in certain building components. Based on the age of the building (1974), it is possible that asbestos-containing materials (ACM) are present. Mr. Moon stated that asbestos-containing materials (ACMs) were not present on site. Mr. Moon believed that an asbestos survey had been conducted by the facility, and no ACM was detected. In addition, Mr. Moon based his assessment on personal knowledge; he was present during building construction. ENVIRON did not observe any ACMs at the time of the site visit.

Mr. Moon reported that the four transformers located on site have been tested for PCB content, and do not contain PCBs. According to Mr. Moon, the transformer fluid was last changed in 1993. ENVIRON did not observe any indication of leakage from the transformers.

Fluorescent light fixtures are used in the facility. The production of PCBs was banned in the United States by the USEPA in 1976; however, light ballasts manufactured through 1979 may contain PCBs. Mr. Moon reported that fluorescent lighting was replaced in the early 1990s; therefore it is unlikely that PCB-bearing light ballasts are present on site.

L. Emergency Planning and Community Right-to-Know Act

Based on information provided by facility personnel and ENVIRON's observations, it appears that the facility is subject to some of the requirements of the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986, also known as Title III of the Superfund Amendments and Reauthorization Act (SARA):

- The facility does not store any extremely hazardous substances (EHS) in a quantity that exceeds its Threshold Planning Quantity (TPQ). Therefore, the facility is not subject to the emergency planning sections of EPCRA (Sections 301-303).

- There reportedly have been no releases into the environment of listed hazardous substances exceeding the reportable quantity (RQ) limits. The facility therefore is not subject to the emergency notification requirements of EPCRA (Section 304).
- Facilities that store substances with Material Safety Data Sheets (MSDSs) on-site in amounts greater than their TPQ, typically 10,000 pounds, are subject to the community right-to-know sections of EPCRA (Sections 311 and 312) requiring the preparation of Emergency and Hazardous Chemical Inventory (Tier II) forms. The facility prepares Tier II forms annually, as required.
- The facility is not subject to the toxic chemical release reporting requirements of EPCRA (Section 313) because, based on information obtained from facility personnel, the facility does not process listed chemicals in quantities exceeding 25,000 pounds per year or use listed chemicals in quantities exceeding 10,000 pounds per year. However, in 1995, the facility filed Form Rs for its use of trichloroethene. Use of this chemical has been discontinued, and the facility is no longer subject to this requirement.

M. Occupational Safety and Health

Although a comprehensive review of occupational health and safety issues was beyond ENVIRON's scope of work, a brief review of current operations was conducted to determine whether any major areas of concern were evident. The facility's plans and documents related to occupational health and safety were reviewed, and are summarized below:

- Based on a review of facility records, and interviews with facility personnel, the facility has been inspected by the Occupational Safety and Health Administration (OSHA) personnel in 1992 and 1996. Violations issued by OSHA were corrected by the facility under the Quick Responder Program, and fines were rescinded.

- The facility has a written hazard communication plan, which outlines procedures for promoting awareness and proper handling of hazardous chemicals at the facility (29 CFR §1910.1200). Comprehensive collections of MSDS for rubber, curing agents, adhesives, and other products used at the facility are available and accessible to all employees.

- OSHA requires that respiratory protection be provided by employers when such equipment is necessary to protect the health of the workers (20 CFR §1910.134). Mr. Moon reported that respiratory protection is required for personnel working in the mold clean room. Mold cleaning was not being conducted during ENVIRON's site visit.

- Facilities in which employees are exposed to noise in excess of 85 decibels are required to administer a hearing conservation program (29 CFR §1910.95), which the facility has done.

- Facilities are required to develop a bloodborne pathogen exposure control plan if the type of work performed is likely to result in occupational exposure to blood or other potentially infectious materials (29 CFR §1910.1030). The facility has a bloodborne pathogen exposure control plan and conducts regular training on this plan for all employees.

- The facility maintains OSHA 200 logs related to reportable occupational injuries and lost-time accidents.

REDACTED

I. INTRODUCTION

ENVIRON Corporation (ENVIRON) was retained by Howard, Darby & Levin to conduct Phase I environmental assessments of select Eagle-Picher Industries, Inc. (Eagle-Picher) facilities. The purpose of ENVIRON's review was to identify any environmental issues that could result in potentially significant liabilities or compliance costs. In addition, occupational safety and health issues were reviewed briefly to determine whether any major areas of concern are present.

In the context of this report, the term "significant" is used to describe areas of concern that could potentially result in liabilities or compliance costs in excess of \$100,000. ENVIRON's conclusions about the relative significance of the areas of concern are based primarily upon our professional judgment and are meant to provide guidance in the face of inherent uncertainty about these issues.

ENVIRON's assessment was based primarily on the following:

- Visits to facilities by ENVIRON personnel.
- A review of environmental documents provided to ENVIRON by Eagle-Picher, counsel or specific facility personnel, including those related to prior environmental assessments and/or investigations and manifests related to current and historical off-site disposal activities.
- Interviews with facility and corporate personnel.
- A search of federal and state environmental databases provided either by Vista Environmental Information Inc. (Vista) or Environmental Data Resources, Inc.

(EDR). The federal databases searched by Vista or EDR are described below. The radii searched are provided in parentheses following each database description.

- National Priorities List (NPL): EPA's list of uncontrolled or abandoned hazardous waste sites; identified for priority remedial action under the Superfund program (one mile).

- Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS): EPA's compilation of sites that have been investigated or are currently being investigated, pursuant to Superfund, for a release or threatened release of hazardous substances (one-half mile).

- RCRA Facilities: EPA's compilation of reporting facilities that generate, transport, treat, store, or dispose of hazardous waste under the Resource Conservation and Recovery Act (RCRA) (generators and transporters: one-quarter mile; treatment, storage or disposal facilities: one mile).

- Emergency Response Notification System (ERNS): a national database used to collect information on reported releases of oil or hazardous substances (one-eighth mile).

In addition to the federal databases, available state environmental databases were searched by Vista or EDR for entries located in the vicinity of each subject facility. When available, state databases searched included:

- State Priorities List (SPL): a generic name for databases maintained by many states that contain sites considered to be actually or potentially contaminated or presenting a possible threat to human health and the environment (one mile).

- State LUST: a database maintained by state or local agencies of known or suspected leaking underground storage tanks (one-half mile).

- State UST: a database maintained by state or local agencies of registered underground storage tanks (one-quarter mile).

- State SWLF: a database maintained by state or local agencies of solid waste landfills, incinerators, and transfer stations (one-half mile).

Vista or EDR completed its search of environmental databases during the first half of January 1998. Because the environmental databases themselves typically have not been updated by the regulatory agencies for periods of up to one year (depending on the database and the state), the database search reported herein will not necessarily list any new facility or site for which an environmental investigation/listing has been initiated subsequent to the last update.

No environmental samples were collected as part of ENVIRON's Phase I efforts, nor did ENVIRON review a chain-of-title for the sites. ENVIRON did not independently verify all of the written or oral information provided to ENVIRON during the course of this review. While ENVIRON has no reason to doubt the accuracy of the information provided to it, this report is complete and accurate only to the extent that the information provided to ENVIRON is complete and accurate.

II. SUMMARY OF CONCLUSIONS

Subject to the qualifications and limitations stated in Chapter I (Introduction), ENVIRON performed an environmental assessment of select Eagle-Picher facilities. The purpose of ENVIRON's review was to identify any on-site and off-site environmental issues that could result in potentially significant liabilities or compliance costs, as well as other noteworthy issues. In the context of this report, the term "potentially significant" is generally used to describe an area of concern that could reasonably result in liabilities or compliance costs in excess of \$100,000. ENVIRON's conclusions about the relative significance of areas of concern are based primarily on our professional judgment and are meant to provide some guidance in areas of uncertainty.

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ENVIRON

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Galena, Kansas

Based on ENVIRON's review, one significant issue was identified for the Galena, Kansas facility, as follows:

- The site is part of the Cherokee County Superfund Site (Galena Subsite). The Galena Subsite, which covers an area of approximately 25 square miles, currently comprises two Operable Units (OUs); the Ground Water/Surface Water OU and the Alternative Water Supply OU. USEPA has issued a Record of Decision (ROD) for the Ground Water/Surface Water OU which requires the removal of mining waste from the ground surface with subsequent disposal in existing mine voids, the recontouring and vegetation of approximately 600 acres of surface area impacted by mining activities, stream channelization and diversion, and investigation of the deep (Roubidoux) aquifer underlying the area. Under the ROD, the total capital costs for implementation of the Ground Water/Surface Water OU and the Alternative Water Supply OU are \$8.3 million and \$5.3 million, respectively. Annual O&M costs for these two OUs are \$15,000 and \$100,000, respectively.

The site is not specifically addressed under the current Ground Water/Surface Water OU. Based on the information available, it is unclear what (if any) future remediation of the Galena site will be required under the present regulatory framework for the area. It is possible, however, that the site could be designated as part of a future separate OU within the Galena Subsite. Eagle-Picher has estimated the costs of remedial action at the site to be \$0.5-7 million. Details of this estimate were not provided but corporate personnel indicated that future action at the site would likely consist, at a minimum, of further investigatory work (including risk

assessment). Based primarily on activities conducted at a similar site in Oklahoma, corporate personnel believe that any future remedial action primarily would consist of consolidation of on-site waste materials, capping and recontouring various areas of the site, and monitoring of certain areas. Corporate personnel also believe that ground water remediation will not be required because of USEPA's previous decisions not to require remediation of the shallow aquifer.

Based on the information stated above, ENVIRON believes that the range of costs provided by Eagle-Picher for future actions at the site is reasonable. Specifically, ENVIRON believes that, at a minimum, further investigation will be required to establish the magnitude and extent of any contamination at the site, and the risks to human health and the environment posed by the site. The costs for such investigation could be in the range of \$1-2 million, depending on the extent and magnitude of contamination existing at the site. Based on the history of operations at the site, ENVIRON also believes that some remedial action ultimately will be required. Under a reasonable-case scenario, such action likely will consist of consolidation of on-site waste materials within individual waste management units and the subsequent capping of these units, on-site compliance monitoring, provision of a vegetated cover over the remaining parts of the site, and stabilization of certain highly contaminated waste materials where needed. The costs for such remedial action (in addition to the investigation costs presented above) would likely be on the order of approximately \$3-5 million depending on the magnitude and extent of contamination present at the site.

It is ENVIRON's understanding that Eagle-Picher has resolved, through a settlement agreement with USEPA, all outstanding liabilities for off-site soil contamination associated with the Galena facility. Hence, for the purposes of this assessment, ENVIRON has not considered any liabilities associated with off-site soil contamination.

Hillsdale, Michigan

Based on ENVIRON's review, one potentially significant issue was identified at the Hillsdale, Michigan facility, as follows:

- Soil and ground water underlying the site is contaminated with volatile organic compounds, primarily TCE. Soil remediation utilizing SVE was initiated at the site in 1986. TCE concentrations in soil underlying the building currently exceed the stated soil action level of 100 ug/kg. Ground water contamination extends off-site, crosses Uran Street, and extends northeast of Uran Street to the vicinity of a trailer park. The facility plans to conduct interim ground water remediation using two horizontal wells. The Michigan Department of Environmental Quality (MDEQ) approved horizontal well installation on July 28, 1997. In addition to the interim remediation, MDEQ has required installation of additional monitoring wells and soil borings, preparation of a formal RAP, and, ultimately, preparation of formal closure documents. Eagle-Picher's current consultant, Dames & Moore, estimates the cost for horizontal well installation, and 5 years of system operation, at approximately \$850,000. This estimate does not include costs for installation of additional monitoring wells and soil borings, and the preparation of a formal RAP as required by the MDEQ. Quoted costs also assume that site access will be readily granted, and work will proceed without difficulty. In addition, costs for operation of the system beyond 5 years are not included. Costs for a final remedy have not been estimated. According to Mr. Moon, Eagle-Picher is assuming that the interim remedial action will ultimately result in the final remedy.

ENVIRON's experience with horizontal wells indicates that difficulties likely will be encountered in the field. To account for uncertainties associated with site access, well installation and operation, and the necessary length of remediation, ENVIRON believes that a more reasonable cost could be on the order of \$1,500,000. In addition, ENVIRON estimates the cost for installation of additional monitoring wells and soil borings, and preparation of formal documents required by MDEQ, to be on the order of \$100,000. Therefore, the cost to complete investigation and remediation

at the site could be on the order of \$1,600,000 or more, depending upon final requirements imposed by MDEQ. Costs to complete site investigation and remediation are difficult to estimate because the scope of work and performance requirements have not been clearly defined; the extent of the ground water plume in the shallow zone has not been fully evaluated; and the remedial technology has not been tested at the site.

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Miami, Oklahoma

Based on ENVIRON's review, no potentially significant or noteworthy issues were identified for the Miami, Oklahoma facility.

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Interoffice Correspondence

Date: 10/9/89

To: Paul Harper, EP Cincinnati
cc: Dorsey Anderson
From: [REDACTED]
Subject: Parking Lot Site Characterization Study

Enclosed is the T.E.C. report of their study as we requested per our P.O. # R01049 dated 8/4/89.

Our contamination problem certainly is relatively minor and certainly is static and contained. The only need for further lateral exploration would be due to a possible sale of the property to a new owner.

Please advise if we should take any further action at this time.

TESTING ENGINEERS & CONSULTANTS, INC.

Wolverine Gasket & Manufacturing Company
1900 West Pleasant Avenue
River Rouge, Michigan 48218

COST ESTIMATE FOR
PRELIMINARY SITE CHARACTERIZATION
WOLVERINE GASKET & MANUFACTURING COMPANY
RIVER ROUGE, MICHIGAN

Testing Engineers & Consultants, Inc.
1333 Rochester Road, P.O. Box 249
Troy, Michigan 48099
(313) 588-6200 or Dial T-E-S-T-I-N-G

02 August 1989

MI0012517



Testing Engineers & Consultants, Inc.

P.O. Box 249 • 1333 Rochester Road • Troy, Michigan 48099

313-588-6200

or Dial 313-T-E-S-T-I-N-G

T.E.C. Quotation Number: 30-1717

Date Issued: 02 August 1989

John Banicki, P.E.
Kenneth Cummins, L.S., P.E.
Gerald M. Belian, P.E.
Elihu Geer, PhD, P.E.
(1902-1985)
Michael Davinich, P.E.

Wolverine Gasket & Manufacturing Company
1900 West Pleasant Avenue
River Rouge, Michigan 48218

Attention: Mr. Gene Shellie

PO # RO1049

8/4/89

Re: Cost Estimate for Preliminary
Site Characterization - Wolverine
Gasket & Manufacturing Company
River Rouge, Michigan

Dear Mr. Shellie:

A preliminary site investigation was performed by Testing Engineers & Consultants, Inc. for the Wolverine Gasket & Manufacturing Company, located in River Rouge, Michigan. This investigation was performed to determine what measures would be needed to assess the extent of contamination if present. As a result, this proposal is to perform a site characterization using ground penetrating radar, soil borings, monitor well installation and analytical testing.

1.0 SCOPE-OF-SERVICES

The site characterization will take place in two phases. The first phase will determine the location of the trenches and any possible buried drums by the use of ground penetrating radar.



All services undertaken subject to the following general policy. Reports are submitted for exclusive use of the clients to whom they are addressed. Their significance is subject to the adequacy and representative character of the samples and to the comprehensiveness of the tests, examinations and surveys made. No quotations from reports or use of TEC'S name is permitted except as expressly authorized by TEC in writing.

CONSULTING ENGINEERS & FULL-SERVICE PROFESSIONAL TESTING AND INSPECTION

OFFICES IN ANN ARBOR, DETROIT, FLINT, LANSING AND TROY



MI0012518

TESTING ENGINEERS & CONSULTANTS, INC.

Wolverine Gasket & Manufacturing Company
Mr. Gene Shellie
02 August 1989

T.E.C. Quotation Number: 30-1717 (Page 2)

1.0 SCOPE-OF-SERVICES (cont'd)

The second phase of the site characterization will include soil borings, monitor well installation, and analytical testing of selected samples. The placement of the monitor wells will be determined by the results of the ground penetrating radar survey of the first phase of the site characterization.

1.1 GROUND PENETRATING RADAR

The ground penetrating radar survey will be the first step in the site characterization of the above referenced site. Ground penetrating Radar (GPR) is one of a number of geophysical techniques used to obtain subsurface data and information. Its ease of field operation makes it possible to survey larger areas quickly and more efficiently than other standard geophysical techniques, such as gravity surveys, seismic testing, electrical resistivity, and magnetic studies. The survey results and interpretations are especially useful when combined with drilling and well log information. The technique is most effectively used for buried pipes and cables, old sewer systems, and buried storage tanks or drums. Other successful applications include pavement thickness determinations and reinforcing bar locations, as well as bedrock depths and disturbed sediment detection.

This investigation in particular will include the determination of any buried drums or tanks within the contaminated area in addition

.....continued

TESTING ENGINEERS & CONSULTANTS, INC.

Wolverine Gasket & Manufacturing Company
Mr. Gene Shellie
02 August 1989

T.E.C. Quotation Number: 30-1717 (Page 3)

1.1 GROUND PENETRATING RADAR (cont'd)

to the locations of the trenches. Testing Engineers proposes to perform the GPR Survey in an 8 hour workday with a staff of two geologists. The rate for field services will be \$1,500.00 per day (based on an 8 hour working day). This includes all equipment, supplies and crew as required. Field reports will consist of graphic data recordings with annotations and location markers.

1.2 SOIL BORINGS

The ground penetrating radar survey will determine the location of the trenches and any possible buried containers such as drums or tanks. The location of the trenches will determine the placement of the three soil borings which will be converted to monitor wells. At this time, only three soil borings will be placed to a depth of 15 feet. The drilling rate for standard drilling with truck-mounted equipment will be \$11.00 per foot. This includes sampling at depths of every 2.5 feet. Where because of unusual conditions, special methods must be used (including portable or hand equipment, high penetration soil over 59 blows/foot), an additional charge of \$1.00 per foot is applied to the basic drilling rate. Also, for very difficult terrain or surface conditions where drilling equipment mounted on a track-vehicle is required, a surcharge of \$100.00 per day is applied. The mobilization fee of \$200.00 per day will include all costs of time and materials to transport men and equipment to and from the site. Environmental sampling and decontamination will be performed by a Testing Engineers & Consultants, Inc. Staff Geologist or Engineer. Field screening will make use of a HNU Photo-ionizer (PID), to monitor

.....continued

TESTING ENGINEERS & CONSULTANTS, INC.

Wolverine Gasket & Manufacturing Company
Mr. Gene Shellie
02 August 1989

T.E.C. Quotation Number: 30-1717 (Page 4)

1.2 SOIL BORINGS (cont'd)

the air as a safety precaution and also to screen for the presence of volatile compounds within the collected soils samples.

It is assumed that the contaminant levels at the above referenced site will require a safety protection level of Level C. At Level C protection all workers will be required to wear personnel protective equipment for all work on-site that involves disturbing soils. This type of work requires full face masks, Tyvec suits, and suitable gloves and boots. There will be a premium of \$45.00/hour per man placed on any time involving Level C protection. If it is determined by the on-site geologist that a higher level of protection is needed all work will be delayed for a period of 48 hours to obtain approval and prepare for the additional added costs of Level B protection (\$125.00/hour per man). All work will be completed in accordance with the Health and Safety provisions and site safety rules and procedures of Testing Engineers & Consultants, Inc.

The soil cuttings and other contaminated materials will be placed in 55-gallon drums. These drums will be kept on-site. It is also recognized that Testing Engineers & Consultants, Inc. will not be held responsible for generating any hazardous materials. It is the responsibility of Wolverine Gasket to provide for the disposal for all well cuttings, and decontamination water, although Testing Engineers & Consultants, Inc. can arrange for their proper disposal.

1.3 MONITOR WELL INSTALLATION

In the site characterization, Testing Engineers & Consultants Inc. proposes that three monitor wells be placed on-site to determine

.....continued

TESTING ENGINEERS & CONSULTANTS, INC.

Wolverine Gasket & Manufacturing Company
Mr. Gene Shellie
02 August 1989

T.E.C. Quotation Number: 30-1717 (Page 5)

1.3 MONITOR WELL INSTALLATION (cont'd)

the ground water characteristics of the site including ground water flow direction, ground water rates, and to define the approximate boundaries and concentrations of organics identified through testing of the ground water. The monitor wells will be installed by converting the three soil borings to monitor wells in locations marked by the on-site geologist.

The monitor wells will be drilled with hollow stem augers and all drilling equipment including the augers, cutting bits and drilling rods will be cleaned by steam-cleaning before beginning work on the project and between each monitor well to ensure no cross-contamination occurs. Due to the nature of the expected contaminants, special stainless steel screens and galvanized steel risers will be incorporated into the well design to ensure that no degradation of well materials will occur due to the possible corrosive materials that might be present in the groundwater.

Standard procedures will be used in construction of the wells. The monitoring well casings will be galvanized steel with an inside diameter of 2 inches and will intercept the groundwater with a 5 foot section of stainless steel screen. The screen will be capped with a threaded stainless steel cap to prevent the infiltration of fines. To provide well security, a 4 inch diameter steel casing 5 feet in length will be placed around the well casing and set into 2 feet of concrete. The top of the steel casing will extend above the inner casing and will be fitted with an overlapping locking, steel cap.

.....continued

TESTING ENGINEERS & CONSULTANTS, INC.

Wolverine Gasket & Manufacturing Company
Mr. Gene Shellie
02 August 1989

T.E.C. Quotation Number: 30-1717 (Page 6)

1.4 WELL DEVELOPMENT AND SAMPLING

Upon completion of the monitoring well installation, each well will be developed by over-pumping until the fluid is clear or specific conductance measurements indicate that groundwater is entering the well. The site geologist will determine this. Well purging will be performed to remove stagnant water from the well casing which is not representative of actual groundwater chemistry. The purging draws in water from the surrounding media which is more representative of water type.

Before any sampling takes place static water level readings will be taken to determine groundwater flow direction. After all necessary readings are recorded we will remove 5 well volumes of water or until stable, conductivity and temperature readings are reached. Sample collection will require the use of a Teflon Bailer to ensure no degradation will occur during the sampling. All collected samples will be preserved at a temperature of 4 degrees celcius and will be stored in zero-headspace sampling jars until analyzed at our own in-house analytical laboratory.

1.5 ANALYTICAL TESTING

This phase consists of analyses of the upper and lower sample of all three boring locations plus analyses of the groundwater for each of the three converted monitor wells. A total of 6 soil samples and three groundwater samples will be analyzed for Volatile Organics (EPA Method 8240) and Semivolatile Organics (EPA Method 8270). In addition, one soil sample will be analyzed for Hazardous Waste Characterization to determine if the soils are ignitable, corrosive, reactive, or toxic by extraction.

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TESTING ENGINEERS & CONSULTANTS, INC.

Wolverine Gasket & Manufacturing Company
Mr. Gene Shellie
02 August 1989

T.E.C. Quotation Number: 30-1717 (Page 7)

2.0 FURNISHED TO TESTING ENGINEERS & CONSULTANTS, INC.

Direction to the site, permission to enter the site and access throughout the site will be provided by the client. For difficult access sites, a surcharge of \$100.00 per hour will be charged for an All Terrain Vehicle drill rig. Downtime not our fault will be charged at \$90.00 per hour.

3.0 FEE SCHEDULE

The following estimate is based on information available at the time of preparing the proposal. Variations from this estimate will be adjusted accordingly using the following unit rates.

GROUND PENETRATING RADAR

- o Subsurface profiling, 1 day at \$1,500.00 per day.....\$1,500.00
- o GPR investigation analysis included in interim report

MONITOR WELL INSTALLATION

- o Mobilization - truck-mounted drill rig and support vehicle - 1 day at \$200.00/day.....\$ 200.00
- o Drilling - 4.25" HSA with sampling every 2.5' 60 linear feet at \$11.00/linear foot.....\$ 660.00
- o Well Installation - 60 linear feet at \$6.00/linear foot.....\$ 360.00
- o Equipment charges:
 - Steam Cleaner: 3 hours at \$100.00/hour
1 day at \$50.00/day.....\$ 350.00
 - Generator: 1 day at \$50.00/day.....\$ 50.00
 - HNU Meter: 1 day at \$100.00/day.....\$ 100.00
- o Level C protection for 3 man crew, 6 hours at \$45.00/hour per man.....\$ 810.00

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TESTING ENGINEERS & CONSULTANTS, INC.

Wolverine Gasket & Manufacturing Company
Mr. Gene Shellie
02 August 1989

T.E.C. Quotation Number: 30-1717 (Page 8)

3.0 FEE SCHEDULE (cont'd)

- o Construct and Disengage Decontamination Pad.....\$1,500.00
- o 10 Drums for decontamination water and cuttings
at \$35.00 each.....\$ 350.00
- o Geologist on-site for 8 hours.....\$ 400.00
- o Materials:
 - 3, 304 stainless steel screens, 2" x 5'
at \$275.00 each..... \$ 825.00
 - 9, 5' galvanized section at \$30.00/joint.....\$ 270.00
 - 3, 4" prolocking covers at \$60.00 each.....\$ 180.00
 - 3, 2" royer caps at \$83.00 each.....\$ 249.00
 - 3, 2" plugs at \$30.00 each.....\$ 90.00
 - Bentonite at \$6.50/bag
a total of 3 bags.....\$ 19.50
- o Well development - 3 hours at \$125.00/hour.....\$ 375.00

GROUND WATER SAMPLE COLLECTION

- o Sample collection, including equipment costs,
4 hours at \$125.00/hour.....\$ 500.00

LABORATORY ANALYSIS (with 10% Discount)

- o 9 Volatile Organics at \$270.00 each.....\$2,430.00
- o 9 Semivolatile Organics at \$540.00 each.....\$4,860.00

DATA INTERPRETATION, CONSULTING AND REPORT

- o Report and consultation.....\$ 500.00
- o Workplan for DNR (if necessary).....\$ 500.00
- o Data Interpretation.....\$ 500.00

ESTIMATED PROJECT TOTAL \$17,575.50

.....continued

TESTING ENGINEERS & CONSULTANTS, INC.

Wolverine Gasket & Manufacturing Company
Mr. Gene Shellie
02 August 1989

T.E.C. Quotation Number: 30-1717 (Page 9)

3.0 FEE SCHEDULE (cont'd)

The invoice will be submitted at the completion of the project for payment within thirty (30) days. It will be based upon the actual work performed and at the quoted unit prices.

The above stated fees represent straight-time rates and would be applicable for hours worked after 8:00 A.M. and before 4:30 P.M. Monday through Friday. Overtime rates would be applied to hours worked exceeding eight (8) hours per day and Saturday at 1.333 x field time rate. Work on Sundays or Holidays will be billed at 2.0 x field time rate.

Additional services and meetings will be at the rates in our current fee schedule. Testing Engineers & Consultants, Inc. fee for any deposition, court appearance, litigation, preparation, or other legal work is \$125.00 per hour plus expenses.

In the event that unforeseen subsurface conditions are encountered or if there is a necessary change in the scope-of-services (including drilling methods), you will be notified before additional services are performed. Additional services will not be performed without first obtaining your approval of the additional costs. The client will be responsible for the cost of re-mobilization or transport of additional equipment to the site.

.....continued

TESTING ENGINEERS & CONSULTANTS, INC.

Wolverine Gasket & Manufacturing Company

Mr. Gene Shellie

02 August 1989

T.E.C. Quotation Number: 30-1717 (Page 9)

4.0 DISCLAIMER CONCERNING GROUND PENETRATION RADAR

Services and resulting interpretations provided by Testing Engineers & Consultants, Inc. shall be performed with our best professional efforts. Because depth of penetration is dependent upon the electrical properties of the material(s) probed and interpretations are opinions based on inference from acquired radar and/or other data, Testing Engineers & Consultants, Inc. does not guarantee the desired penetration depth or, accuracy or correctness of interpretations and Testing Engineers & Consultants, Inc. will not accept liability or responsibility for any loss, damages or expenses that may be incurred or sustained by any services or interpretations performed by Testing Engineers & Consultants, Inc. or others.

5.0 AUTHORIZATION

Testing Engineers & Consultants, Inc. appreciates your consideration of this proposal and looks forward to working with you. If this proposal meets with your approval, please sign in the spaces provided below and return an executed copy for our files. We will consider this our legal contract and written authorization to proceed. Additionally, your signature is agreement to our terms that payments for all invoices are due within thirty (30) days of the date they are issued. An administrative fee of 2% per month will be added to all delinquent accounts, and it is further agreed that the client is liable for all costs and expenses of collection, including reasonable attorney's fees and costs, whether or not legal proceedings are instituted.

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TESTING ENGINEERS & CONSULTANTS, INC.

Wolverine Gasket & Manufacturing Company
Mr. Gene Shellie
02 August 1989

T.E.C. Quotation Number: 30-1717 (Page 10)

5.0 AUTHORIZATION (cont'd)

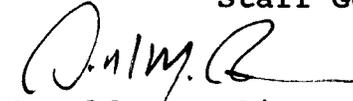
We are looking forward to working with you on this project.
Please call us if there are any questions or if we can be of
additional service to you on future projects.

Respectfully submitted,

TESTING ENGINEERS & CONSULTANTS, INC.



Robert J. Nowakowski
Staff Geologist



Gerald M. Belian, P.E.
Executive Vice-President

RJN/GMB/rjn

cc: Mr. Gene Shellie, River Rouge

Accepted By: _____

Firm

Authorized Signature

Typed or Printed Name

Title

Date

* * * * *



WOLVERINE GASKET & MFG. CO.

1900 W. PLEASANT AVENUE • RIVER ROUGE, MICHIGAN 48218-1098

313-841-8200
Fax # 841-4819

TELECOPIER COVER LETTER

FAX NO. (313) 841-8200 ext. 324 or 841-4819

Please deliver the following page(s) to:

TO: PAUL HARPER

FROM: Gene Shellie

TOTAL NUMBER OF PAGES, INCLUDING THIS PAGE 13

DATE: Aug 3, 1989

IF YOU DO NOT RECEIVE ALL PAGES, OR HAVE ANY PROBLEMS WITH THIS TRANSMISSION, PLEASE DO NOT HESITATE TO TELEPHONE THIS OFFICE.

Paul Re T.E.C. revised proposal dtd 8/2/89 - site survey.

Believe this proposal is in keeping with our discussion. Produces a better than 50% cost reduction from their original proposal.

Your comments, pls. I am prepared to proceed promptly pending your approval of this plan. Work can begin in approx one week.

DIVISION OF
EAGLE EP PICHER
INDUSTRIES, INC.

TESTING ENGINEERS & CONSULTANTS, INC.

Wolverine Gasket & Manufacturing Company
1900 West Pleasant Avenue
River Rouge, Michigan 48218

COST ESTIMATE FOR
PRELIMINARY SITE CHARACTERIZATION
WOLVERINE GASKET & MANUFACTURING COMPANY
RIVER ROUGE, MICHIGAN

Testing Engineers & Consultants, Inc.
1333 Rochester Road, P.O. Box 249
Troy, Michigan 48099
(313) 588-6200 or Dial T-E-S-T-I-N-G

02 August 1989

MI0012530



Testing Engineers & Consultants, Inc.

P.O. Box 249 • 1333 Rochester Road • Troy, Michigan 48099

313-588-6200

or Dial 313-T-E-S-T-I-N-G

T.E.C. Quotation Number: 30-1717

Date Issued: 02 August 1989

John Banicki, P.E.
Kenneth Cummins, L.S., P.E.
Gerald M. Belian, P.E.
Elihu Geer, PhD, P.E.
(1902-1985)
Michael Davinich, P.E.

Wolverine Gasket & Manufacturing Company
1900 West Pleasant Avenue
River Rouge, Michigan 48218

Attention: Mr. Gene Shellie

Re: Cost Estimate for Preliminary
Site Characterization - Wolverine
Gasket & Manufacturing Company
River Rouge, Michigan

Dear Mr. Shellie:

A preliminary site investigation was performed by Testing Engineers & Consultants, Inc. for the Wolverine Gasket & Manufacturing Company, located in River Rouge, Michigan. This investigation was performed to determine what measures would be needed to assess the extent of contamination if present. As a result, this proposal is to perform a site characterization using ground penetrating radar, soil borings, monitor well installation and analytical testing.

1.0 SCOPE-OF-SERVICES

The site characterization will take place in two phases. The first phase will determine the location of the trenches and any possible buried drums by the use of ground penetrating radar.



All services undertaken subject to the following general policy. Reports are submitted for exclusive use of the clients to whom they are addressed. Their significance is subject to the adequacy and representative character of the samples and to the comprehensiveness of the tests, examinations and surveys made. No quotations from reports or use of TEC'S name is permitted except as expressly authorized by TEC in writing.

CONSULTING ENGINEERS & FULL-SERVICE PROFESSIONAL TESTING AND INSPECTION

OFFICES IN ANN ARBOR, DETROIT, FLINT, LANSING AND TROY



MI0012531

TESTING ENGINEERS & CONSULTANTS, INC.

Wolverine Gasket & Manufacturing Company
Mr. Gene Shellie
02 August 1989

T.E.C. Quotation Number: 30-1717 (Page 2)

1.0 SCOPE-OF-SERVICES (cont'd)

The second phase of the site characterization will include soil borings, monitor well installation, and analytical testing of selected samples. The placement of the monitor wells will be determined by the results of the ground penetrating radar survey of the first phase of the site characterization.

1.1 GROUND PENETRATING RADAR

The ground penetrating radar survey will be the first step in the site characterization of the above referenced site. Ground penetrating Radar (GPR) is one of a number of geophysical techniques used to obtain subsurface data and information. Its ease of field operation makes it possible to survey larger areas quickly and more efficiently than other standard geophysical techniques, such as gravity surveys, seismic testing, electrical resistivity, and magnetic studies. The survey results and interpretations are especially useful when combined with drilling and well log information. The technique is most effectively used for buried pipes and cables, old sewer systems, and buried storage tanks or drums. Other successful applications include pavement thickness determinations and reinforcing bar locations, as well as bedrock depths and disturbed sediment detection.

This investigation in particular will include the determination of any buried drums or tanks within the contaminated area in addition

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TESTING ENGINEERS & CONSULTANTS, INC.

Wolverine Gasket & Manufacturing Company
Mr. Gene Shellie
02 August 1989

T.E.C. Quotation Number: 30-1717 (Page 3)

1.1 GROUND PENETRATING RADAR (cont'd)

to the locations of the trenches. Testing Engineers proposes to perform the GPR Survey in an 8 hour workday with a staff of two geologists. The rate for field services will be \$1,500.00 per day (based on an 8 hour working day). This includes all equipment, supplies and crew as required. Field reports will consist of graphic data recordings with annotations and location markers.

1.2 SOIL BORINGS

The ground penetrating radar survey will determine the location of the trenches and any possible buried containers such as drums or tanks. The location of the trenches will determine the placement of the three soil borings which will be converted to monitor wells. At this time, only three soil borings will be placed to a depth of 15 feet. The drilling rate for standard drilling with truck-mounted equipment will be \$11.00 per foot. This includes sampling at depths of every 2.5 feet. Where because of unusual conditions, special methods must be used (including portable or hand equipment, high penetration soil over 59 blows/foot), an additional charge of \$1.00 per foot is applied to the basic drilling rate. Also, for very difficult terrain or surface conditions where drilling equipment mounted on a track-vehicle is required, a surcharge of \$100.00 per day is applied. The mobilization fee of \$200.00 per day will include all costs of time and materials to transport men and equipment to and from the site. Environmental sampling and decontamination will be performed by a Testing Engineers & Consultants, Inc. Staff Geologist or Engineer. Field screening will make use of a HNU Photo-ionizer (PID), to monitor

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TESTING ENGINEERS & CONSULTANTS, INC.

Wolverine Gasket & Manufacturing Company
Mr. Gene Shellie
02 August 1989

T.E.C. Quotation Number: 30-1717 (Page 4)

1.2 SOIL BORINGS (cont'd)

the air as a safety precaution and also to screen for the presence of volatile compounds within the collected soils samples.

It is assumed that the contaminant levels at the above referenced site will require a safety protection level of Level C. At Level C protection all workers will be required to wear personnel protective equipment for all work on-site that involves disturbing soils. This type of work requires full face masks, Tyvec suits, and suitable gloves and boots. There will be a premium of \$45.00/hour per man placed on any time involving Level C protection. If it is determined by the on-site geologist that a higher level of protection is needed all work will be delayed for a period of 48 hours to obtain approval and prepare for the additional added costs of Level B protection (\$125.00/hour per man). All work will be completed in accordance with the Health and Safety provisions and site safety rules and procedures of Testing Engineers & Consultants, Inc.

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1.3 MONITOR WELL INSTALLATION

In the site characterization, Testing Engineers & Consultants Inc. proposes that three monitor wells be placed on-site to determine

.....continued

TESTING ENGINEERS & CONSULTANTS, INC.

Wolverine Gasket & Manufacturing Company
Mr. Gene Shellie
02 August 1989

T.E.C. Quotation Number: 30-1717 (Page 5)

1.3 MONITOR WELL INSTALLATION (cont'd)

the ground water characteristics of the site including ground water flow direction, ground water rates, and to define the approximate boundaries and concentrations of organics identified through testing of the ground water. The monitor wells will be installed by converting the three soil borings to monitor wells in locations marked by the on-site geologist.

The monitor wells will be drilled with hollow stem augers and all drilling equipment including the augers, cutting bits and drilling rods will be cleaned by steam-cleaning before beginning work on the project and between each monitor well to ensure no cross-contamination occurs. Due to the nature of the expected contaminants, special stainless steel screens and galvanized steel risers will be incorporated into the well design to ensure that no degradation of well materials will occur due to the possible corrosive materials that might be present in the groundwater.

Standard procedures will be used in construction of the wells. The monitoring well casings will be galvanized steel with an inside diameter of 2 inches and will intercept the groundwater with a 5 foot section of stainless steel screen. The screen will be capped with a threaded stainless steel cap to prevent the infiltration of fines. To provide well security, a 4 inch diameter steel casing 5 feet in length will be placed around the well casing and set into 2 feet of concrete. The top of the steel casing will extend above the inner casing and will be fitted with an overlapping locking, steel cap.

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TESTING ENGINEERS & CONSULTANTS, INC.

Wolverine Gasket & Manufacturing Company
Mr. Gene Shellie
02 August 1989

T.E.C. Quotation Number: 30-1717 (Page 6)

1.4 WELL DEVELOPMENT AND SAMPLING

Upon completion of the monitoring well installation, each well will be developed by over-pumping until the fluid is clear or specific conductance measurements indicate that groundwater is entering the well. The site geologist will determine this. Well purging will be performed to remove stagnant water from the well casing which is not representative of actual groundwater chemistry. The purging draws in water from the surrounding media which is more representative of water type.

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This phase consists of analyses of the upper and lower sample of all three boring locations plus analyses of the groundwater for each of the three converted monitor wells. A total of 6 soil samples and three groundwater samples will be analyzed for Volatile Organics (EPA Method 8240) and Semivolatile Organics (EPA Method 8270). In addition, one soil sample will be analyzed for Hazardous Waste Characterization to determine if the soils are ignitable, corrosive, reactive, or toxic by extraction.

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TESTING ENGINEERS & CONSULTANTS, INC.

Wolverine Gasket & Manufacturing Company
Mr. Gene Shellie
02 August 1989

T.E.C. Quotation Number: 30-1717 (Page 7)

2.0 FURNISHED TO TESTING ENGINEERS & CONSULTANTS, INC.

Direction to the site, permission to enter the site and access throughout the site will be provided by the client. For difficult access sites, a surcharge of \$100.00 per hour will be charged for an All Terrain Vehicle drill rig. Downtime not our fault will be charged at \$90.00 per hour.

3.0 FEE SCHEDULE

The following estimate is based on information available at the time of preparing the proposal. Variations from this estimate will be adjusted accordingly using the following unit rates.

GROUND PENETRATING RADAR

- o Subsurface profiling, 1 day at \$1,500.00 per day.....\$1,500.00
- o GPR investigation analysis included in interim report

MONITOR WELL INSTALLATION

- o Mobilization - truck-mounted drill rig and support vehicle - 1 day at \$200.00/day.....\$ 200.00
- o Drilling - 4.25" HSA with sampling every 2.5' 60 linear feet at \$11.00/linear foot.....\$ 660.00
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- o Equipment charges:
 - Steam Cleaner: 3 hours at \$100.00/hour
1 day at \$50.00/day.....\$ 350.00
 - Generator: 1 day at \$50.00/day.....\$ 50.00
 - HNU Meter: 1 day at \$100.00/day.....\$ 100.00
- o Level C protection for 3 man crew, 6 hours at \$45.00/hour per man.....\$ 810.00

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TESTING ENGINEERS & CONSULTANTS, INC.

Wolverine Gasket & Manufacturing Company
Mr. Gene Shellie
02 August 1989

T.E.C. Quotation Number: 30-1717 (Page 8)

3.0 FEE SCHEDULE (cont'd)

- o Construct and Disengage Decontamination Pad.....\$1,500.00
- o 10 Drums for decontamination water and cuttings
at \$35.00 each.....\$ 350.00
- o Geologist on-site for 8 hours.....\$ 400.00
- o Materials:
 - 3, 304 stainless steel screens, 2" x 5'
at \$275.00 each..... \$ 825.00
 - 9, 5' galvanized section at \$30.00/joint.....\$ 270.00
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 - 3, 2" plugs at \$30.00 each.....\$ 90.00
 - Bentonite at \$6.50/bag
a total of 3 bags.....\$ 19.50
- o Well development - 3 hours at \$125.00/hour.....\$ 375.00

GROUND WATER SAMPLE COLLECTION

- o Sample collection, including equipment costs,
4 hours at \$125.00/hour.....\$ 500.00

LABORATORY ANALYSIS (with 10% Discount)

- o 9 Volatile Organics at \$270.00 each.....\$2,430.00
- o 9 Semivolatile Organics at \$540.00 each.....\$4,860.00

DATA INTERPRETATION, CONSULTING AND REPORT

- o Report and consultation.....\$ 500.00
- o Workplan for DNR (if necessary).....\$ 500.00
- o Data Interpretation.....\$ 500.00

ESTIMATED PROJECT TOTAL \$17,575.50

.....continued

TESTING ENGINEERS & CONSULTANTS, INC.

Wolverine Gasket & Manufacturing Company
Mr. Gene Shellie
02 August 1989

T.E.C. Quotation Number: 30-1717 (Page 9)

3.0 FEE SCHEDULE (cont'd)

The invoice will be submitted at the completion of the project for payment within thirty (30) days. It will be based upon the actual work performed and at the quoted unit prices.

The above stated fees represent straight-time rates and would be applicable for hours worked after 8:00 A.M. and before 4:30 P.M. Monday through Friday. Overtime rates would be applied to hours worked exceeding eight (8) hours per day and Saturday at 1.333 x field time rate. Work on Sundays or Holidays will be billed at 2.0 x field time rate.

Additional services and meetings will be at the rates in our current fee schedule. Testing Engineers & Consultants, Inc. fee for any deposition, court appearance, litigation, preparation, or other legal work is \$125.00 per hour plus expenses.

In the event that unforeseen subsurface conditions are encountered or if there is a necessary change in the scope-of-services (including drilling methods), you will be notified before additional services are performed. Additional services will not be performed without first obtaining your approval of the additional costs. The client will be responsible for the cost of re-mobilization or transport of additional equipment to the site.

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TESTING ENGINEERS & CONSULTANTS, INC.

Wolverine Gasket & Manufacturing Company
Mr. Gene Shellie
02 August 1989

T.E.C. Quotation Number: 30-1717 (Page 9)

4.0 DISCLAIMER CONCERNING GROUND PENETRATION RADAR

Services and resulting interpretations provided by Testing Engineers & Consultants, Inc. shall be performed with our best professional efforts. Because depth of penetration is dependent upon the electrical properties of the material(s) probed and interpretations are opinions based on inference from acquired radar and/or other data, Testing Engineers & Consultants, Inc. does not guarantee the desired penetration depth or, accuracy or correctness of interpretations and Testing Engineers & Consultants, Inc. will not accept liability or responsibility for any loss, damages or expenses that may be incurred or sustained by any services or interpretations performed by Testing Engineers & Consultants, Inc. or others.

5.0 AUTHORIZATION

Testing Engineers & Consultants, Inc. appreciates your consideration of this proposal and looks forward to working with you. If this proposal meets with your approval, please sign in the spaces provided below and return an executed copy for our files. We will consider this our legal contract and written authorization to proceed. Additionally, your signature is agreement to our terms that payments for all invoices are due within thirty (30) days of the date they are issued. An administrative fee of 2% per month will be added to all delinquent accounts, and it is further agreed that the client is liable for all costs and expenses of collection, including reasonable attorney's fees and costs, whether or not legal proceedings are instituted.

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TESTING ENGINEERS & CONSULTANTS, INC.

Wolverine Gasket & Manufacturing Company
Mr. Gene Shellie
02 August 1989

T.E.C. Quotation Number: 30-1717 (Page 10)

5.0 AUTHORIZATION (cont'd)

We are looking forward to working with you on this project.
Please call us if there are any questions or if we can be of
additional service to you on future projects.

Respectfully submitted,

TESTING ENGINEERS & CONSULTANTS, INC.

Robert J. Nowakowski

Robert J. Nowakowski
Staff Geologist

Gerald M. Belian

Gerald M. Belian, P.E.
Executive Vice-President

RJN/GMB/rjn

cc: Mr. Gene Shellie, River Rouge

Accepted By: _____

Firm

Authorized Signature

Typed or Printed Name

Title

Date

* * * * *



WOLVERINE GASKET & MFG. CO.

1900 W. PLEASANT AVENUE • RIVER ROUGE, MICHIGAN 48218-1098

313-841-8200
FAX 313-841-3908

July 26, 1989

Mr. Robert Nowakowski
Testing Engineers & Consultants
P.O. Box 249
Troy, Mi. 48099

Subject: Request for Revised Proposal
Ref: TEC Quotation # 30-1717 Dated 15 March 1989

Dear Mr. Nowakowski:

In reviewing your referenced proposal for site characterization at our River Rouge former dump area, we feel the proposal is too extensive for a Phase I investigation. We are not at this juncture trying to determine the vertical and aerial extent of contamination nor are we trying to provide a 3-dimensional model of contaminated soils and/or groundwater. We really are trying to ascertain at this time whether or not there is substantial contamination of the soils and/or groundwater. Should this phase determine that contamination has occurred, then we can move into the more costly exercise of determining how much and how far.

In keeping with the above game plan, will you kindly submit to my attention another proposal for the following activities:

1. Ground Penetrating Radar: As referenced in your paragraph 1.1; an 8 hour work day session using staff of two geologists @ \$1500.00/day plus costs.
2. Soil Borings: No borings at this time beyond those to be completed as monitoring wells (see item 3 below).
3. Monitoring Well Installation: Three monitoring wells should be bored and completed at appropriate locations as indicated in your paragraph 1.2 or as deemed advisable. These wells will determine the direction of ground water flow and enable us to determine the presence of organic and/or inorganic contaminants in the ground water. The wells should be completed to RCRA monitoring well specifications.

DIVISION OF

EAGLE  PICHER
INDUSTRIES, INC.

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MI0012542

Testing Engineers & Consultants
Mr. Nowakowski
July 26, 1989

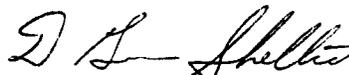
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4. Analytical Testing: The analytical testing as proposed seems overly burdensome for a presence or absence investigation. We want discreet, not composite samples. We desire sampling the monitoring well borings at 5 foot intervals. Assuming 20 ft to ground water depth, this would be 3 well borings at 4 samples each; a total of 12 soil samples. Additionally, we would have three ground-water samples, one from each of the monitoring wells. All samples should be analyzed for volatile organics, semi-volatile organics and metals. (No testing for F-series solvents or for hazardous waste characterization.)

Your early response to this proposal request is requested. It is our intent to proceed with this investigation promptly upon receipt and review of the requested proposal.

Regards,

WOLVERINE GASKET & MFG. CO.



D. Gene Shellie
Plant Engineer

bfg/GS

~~cc: D. Anderson~~